AN
INQUIRY
INTO
THE VALUE
OF
THE ANCIENT
GREEK AND ROMAN
MONEY.

By MATTHEW RAPER, Eſq; F. R. S.

from [illegible]

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The MS notes are by Mr Bowyer the Printer. and I had the copy from Mr Nichols his successor.

Greek oz. 455,33. Troy gr. ib. p. 26. the same with the German and was of Greek origin.

An Inquiry into the Value of the ancient Greek *and* Roman *Money.*

INTRODUCTION.

THE firſt writers, who, after the revival of learning in Europe, made the Greek and Roman money an object of their inquiries, took great pains to collect and explain ſuch paſſages in antient authors as related to it; but very little to diſcover its true value. In ſo much, that ſome of them have ſuppoſed the Roman Aureus to have been heavier than the Greek Philippic (1); and others, that the Denarius was heavier than the Attic Drachm; but moſt of them agreed in this, that the two laſt mentioned coins were exactly equal. All which opinions are proved to be erroneous by the coins themſelves now in being.

~~Nay, Greaves it seems, determined that the Roman Denarius was at sixteen eighths of a grain heavier than an Attic Drachm. wch did not hinder their being exchanged for the other.~~

The Roman lb. was to the Athenian as 24 to 25. The Roman ounce was to the Greek as 438 to 456 1/4 Troy grains. Notwithstanding wch the difference was so small, that they were interchanged one with the other. Clarke of Coins, p. 27. 43. The opinions are not erroneous about the weight of the Coins. The Roman somewhat heavier than the Greek.

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(1) See Gronovius, de pecunia vetere, l. ii. c. 8.

Our

Our learned countryman John Greaves, was, I believe, the firſt who diſcovered that the Attic Drachm was heavier than the Denarius (2). He ſeems to have examined a greater number of Greek and Roman coins than any other writer on the ſubject. His balance turned with the 80th part of a grain (3); and his weights were correctly adjuſted to the Engliſh ſtandard (4), as appears from the compariſon the Royal Society of London cauſed to be made, in the year 1742, of the Troy Ounce with that of Paris, which was found to agree preciſely with what Greaves had ſo long before determined (5).

His care and diligence in weighing the coins, and his fidelity in reporting them, have never been doubted; but he is not always ſufficiently explicit; as, where he ſays he had peruſed many hundred Denarii Conſulares, and found the beſt of them to amount to 62 grains Engliſh (6); it is probable he found many ſuch, for there are many of this weight and upwards in that noble repoſitory the Britiſh Muſeum; but when he ſays in the ſame paragraph, that, weighing many Attic Tetradrachms, he found the beſt of them to be 268 grains, he may mean only one, for very few come up to that weight. Nor hath he given a particular deſcription of this

(2) See the dedication of his Diſcourſe of the Roman Foot and Denarius, printed in the year 1647, and reprinted, with other of his works, by Dr. Birch, in 1736. I quote the original edition, which contains 134 pages numbered after the dedication. That of Dr. Birch, begins at p. 181 (excluding the dedication), and ends at p. 356. (3) Ibid. (4) See his Diſcourſe, p. 61.

(5) Philoſophical Tranſactions, N° 465. (6) P. 61.

heavy Tetradrachm, but ſeems to think the weight of that coin was in all ages the ſame, which probably it was not.

He allows that ſilver is more liable to be overſized at the mint than gold (7); yet he determines the weight of the Attic Drachm from the Tetradrachm to be 67 grains (8), though no gold coin, he ever ſaw, comes up to it by a quarter of a grain in the Drachm (9).

He hath likewiſe made his Denarius above half a grain heavier than any he had peruſed, to agree with Villalpandus's weight of the Congius (1); which led him to ſuppoſe, that the Roman Aureus was juſt double the weight of the Denarius (2), contrary to the expreſs teſtimony of Pliny. And he hath not given a clear account of the Conſular Aureus.

In the year 1708, John Caſpar Eiſenſchmid, of Straſburg, publiſhed his book de ponderibus & menſuris veterum, &c. He is an accurate and a faithful writer, but wanted materials. He uſed Paris weights, which ſeem to have been correctly ſized to that ſtandard. Having ſeen no Roman gold older than the reign of Tiberius, which was not too imperfect to diſcover its original weight (3), and finding the moſt perfect Conſular Denarii to be very unequally ſized, he took a mean from a pretty large heap of ſuch as he thought unexceptionably perfect, rejecting ſome, which, though apparently ſo, were very deficient in weight, and thence determined the weight of the Conſular Denarius to be $74\frac{2}{7}$ Paris grains, equal to $60\frac{15}{16}$ Troy (4). But, as he hath not told us what number of pieces his large heap contained, nor the weight of the heavieſt and lighteſt of them, his concluſion is not ſatisfactory.

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(7) P. 103. (8) P. 66. (9) P. 72.
(1) Compare p. 94 and 120, with p. 61. (2) P. 103.
(3) Eiſenſchmid, p. 34.

Having no perfect Greek coins, either gold or ſilver, except one very ancient Attic Tetradrachm weighing 333 Paris grains, he derived the weight of the Attic Drachm from his Denarius, by a proportion between the Roman Pound and the Attic Talent, mentioned in the 38th book of Livy's Hiſtory, which happened to agree with the weight of his ancient Tetradrachm, giving a Drachm of $83\frac{1}{4}$ Paris grains, equal to almoſt $68\frac{3}{16}$ Troy (5).

Neither he nor Greaves have taken notice of the Roman Scrupular gold coin, nor made ſuch uſe of the Conſtantinopolitan Solidus, as might be expected, from the great number now remaining in the moſt perfect preſervation, though the latter hath given the weights of 29 of them.

Greaves, very juſtly, obſerves, that, "gold coins "are not ſubject to be conſumed by time and ruſt, "but only *ex intertrimento*; and therefore we may "the ſafelier give credit to them. And becauſe "the difference, though but of a grain, is of ſome "conſideration in gold, the maſters of the mint uſe "to be more circumſpect about them: whereas, in "ſilver coins, ſince it is hardly worth the pains to "ſtand preciſely on the exceſs or defect of a grain, "there are few of theſe ſo exact, but either exceed

Polybius, Excerp. Leg. p. 321, ed. Casaub. ἀργυρίου Ἀττικοῦ Ῥωμαίοις ἀρίστου τάλαντα μυρία δισχίλια ἐν ἔτεσιν ΙΒ. Romanis Attica talenta XII millia intra duodecim annos. Livy says l. XXXVIII. 38. Argenti probi XII millia Attica talenta dato, which we sh^d read, Argenti probi Attici XII mill. a talenta Talent[illegible] for the better authority of Polybius. Clark, c. VI. p. 402. ([illegible] this Author [illegible] p. 10.) The Romans, excellent at making treaties to their advantage, fixed upon the Attick standard for the fineness of the Money, and upon the Egyptian ~~standard~~ Talent for the weight, which was one fourth heavier than the Attic. ~~[illegible]~~ But why the Egyptian? Because it was in use all over Syria and well known to Antiochus. The Egyptian talent was of that weight, 5 times 96 ounces, instead of 5 times 72. But that point w^ch M^r Eisenschmid had in view, the proportion between the Greek and ~~[illegible]~~ Roman Pounds, is so far from being determined by this treaty, "as that it is not so much as alluded to in it. — Clarke ibid. — Crevier on Livy leaves the difficulty as he found it.

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(4) P. 33. (5) P. 40 and 42.

“ or want in the very mint one or two grains, and
“ ſometimes more (6).”

I found, the heavieſt of twenty new guineas, of the year 1768, freſh from the mint, to outweigh the lighteſt $1\frac{2}{5}$ grains. The didrachmal gold of Philip and Alexander is about 4 grains heavier than our guinea; and I never found the difference between any two of them, that appeared to be perfect and unworn, amount to two grains. The ſilver, likewiſe, of theſe two Princes is more correctly ſized, than any other ancient ſilver money I have ſeen.

~~See Clarke p. 507, & seq.~~
[Notwithstanding the great inequality which upon many accounts are observed to remain in the ancient pound, some of them come very near the present Roman pound. Clarke p. 513.

The Roman Conſular Aureus is between 3 and 4 grains lighter than a guinea, and is not ſo correctly ſized as the Greek gold; but much more ſo than the Denarius, which is ſo unequal, that the Roman mint-maſters ſeem to have contented themſelves, with ſtriking a certain number of pieces out of the pound of ſilver, with very little regard to their equality. Therefore, as far as the diſcovery of the weight of the Roman pound depends on their coin, it muſt be obtained from the gold alone.

Eiſenſchmid ſuppoſes, that gold coins may have loſt a ſenſible part of their original weight, though no appearance of wear can be diſcovered on them, even with a glaſs (7). On the contrary, I have found guineas of George II, and Ann, whoſe wear, on the moſt prominent parts of the head, was viſible at the firſt glance of the naked eye, which were above ſtandard weight; therefore, where no appearance of wear, or other diminution, can be diſcovered on a coin, I ſee no reaſon to ſuppoſe it hath loſt any ſenſible part of its original weight.

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(6) Greaves, p. 103. (7) Eiſenſchmid, p. 34, 35.

In the following diſcouſe, I have collected the moſt authentic evidence I could find, of the weights of the Attic Drachm and the Roman Denarius; part of which I have taken from that very valuable publication of the Pembroke collection of coins. But, valuable as it is, it would have been more ſatiſfactory to the accurate peruſer, if the Noble Editor had diſtinguiſhed the degree of preſervation the ſeveral coins were in, and given the weights of the moſt perfect, nearer than to half a grain.

In the year 1759, by the favour of the learned and ingenious Dr. Gowin Knight, Principal Librarian of the Britiſh Muſeum, I weighed a conſiderable number of the moſt perfect Greek and Roman coins in that noble Repoſitory.

The ſcales I uſed were good workmanſhip, of the common conſtruction, made by Read; the beam 8 inches, and they turned freely with leſs than the 20th part of a grain. To avoid any error, I weighed each piece in both pans. My weights were moſt accurately ſized; and, upon comparing the Troy ounce I uſed, with that in the archives of the Royal Society, in an exquiſite balance of my late much eſteemed friend, Dr. Henry Pemberton, it was found to be $\frac{3}{8}$ of a grain heavier, which I have allowed for in the following diſcourſe.

This eſſay hath received very conſiderable additions from the ineſtimable treaſury of ancient coins, in the poſſeſſion of the learned Matthew Duane Eſq; who moſt obligingly aſſiſted me in taking the weights of ſuch as were for my purpoſe. And it was from the coins in this collection only, that I diſcovered the Eginean Talent to have been the money-ſtandard of Macedon, before Philip changed it for the Attic.

Dr. Hunter, likewiſe, very politely favoured me with the inſpection of his curious cabinet of ancient coins, ſome of which I ſhall have occaſion to mention in the following diſcourſe; as well as ſome brought from Greece, by my learned friend James Stuart, Eſq; who, it is hoped, will ſoon favour the Public with the ſecond volume of his Antiquities of Athens.

§ 1. *Of the Attic Drachm.*

THE Greek coins were not only money, but weights. Thus their Drachm was both a piece of money, and a weight; their Mina was 100 Drachms as a ſum, and the ſame number as a weight; and their Talent contained 60 Minas, or 6000 Drachms, both by weight and tale.

This way of reckoning 100 Drachms to the Mina, and 60 Minas to the Talent, was common to all Greece; and where the Drachm of one city differed from that of another, their reſpective Talents differed in the ſame proportion (8).

Of all the Greek cities and free ſtates, both in Europe and the leſſer Aſia, that of Athens was the moſt famous for the fineneſs of their ſilver, and the juſtneſs of its weight (9): Xenophon tells us, that whitherſoever a man carried Attic ſilver, he would ſell it to advantage (1). And their money deſerves our more particular attention, both becauſe we have the moſt unexceptionable evidence of its ſtandard weight; and what little we know of the money of other Greek cities, is chiefly by compariſon with this.

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(8) Pollux, L. IX. c. 6. § 86.

The current coin of Athens, was the ſilver Drachm, which they divided into 6 Oboles, and ſtruck ſilver pieces of 1, 2, 3, 4, and 5 Oboles, of half an Obole, and a quarter of an Obole (2). Their larger coins above the Drachm were, the Didrachm, the Tridrachm (3), and the Tetradrachm; which laſt they called Stater, or the ſtandard.

It does not appear that they coined copper till the 26th year of the Peloponneſian war, when Callias was a ſecond time Archon (4). It was ſoon after publickly cried down; and the concluſion of the proclamation was to this effect, that, ſilver is the lawful money of Athens (5). But they ſeem to have had copper money not long after; for Theophraſtus, Demoſthenes, and ſome of the Comic Poets, quoted by Athenæus and Pollux, mention the Chalcus, which was the name of the copper coin (6). Many pieces of Attic copper are now in being (7); and Vitruvius ſays, they coined copper Oboles, and quarter Oboles (8).

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(9) See Ariſtophanes, Ranæ ver. 733. Polybius, in Excerpt. Leg. § 28. Δότωσαν δὲ Αἴτωλοι ἀργυρίου μὴ χείρονος Ἀττικοῦ κ. τ. λ. and § 35. Ἀργυρίου δὲ δότω Ἀντίοχος Ἀττικοῦ Ῥωμαίοις ἀρίστου. κ. τ. λ.

(1) Xenophon περὶ προσόδων. c. 3. Καὶ οἱ ἀργύριον ἐξάγοντες, καλὴν ἐμποριαν ἐξάγουσιν· ὅπου γὰρ ἂν πωλῶσιν αὐτὸ, πανταχοῦ πλεῖον τοῦ ἀρχαίου λαμβάνουσιν.

(2) The piece of 50 gr. in P. II. T. 48. of the Pembroke collection, ſeems to be a Pentobolon; and the firſt in that plate a Hemiobolion. Mr. Stuart brought both half and quarter Oboles of ſilver from Athens.

(3) Pollux, L. IX. c. 6. § 60. There is a half Tridrachm of Alexander in the Britiſh Muſeum.

(4) See the Schol. on ver. 737 of Ariſtophanis Ranæ.

Authors differ in the value of the Chalcus; ſome ſay, it was the ſixth part of an Obole (9), others the 8th (1); Pliny (ſpeaking of it as a weight) the 10th (2); and Vitruvius, in the place before quoted, ſays, ſome called the quarter of an Obole Dichalcon, others Trichalcon. According to Polybius, it ſeems to have been the 8th part, for he makes a quarter of an Obole equal to half a Roman *As* (3); but the Denarius paſſing for 16 *Aſſes*, and the Drachm for 6 Oboles, if a quarter of an Obole was equal to half an *As*, the Denarius ſhould be greater than the Drachm, which it never was. Polybius, therefore, gives this for the neareſt value of half an *As* in Greek money, as it was if the Obole paſſed for 8 Chalci; but had it paſſed for 10, he would have ſaid one 5th of an Obole, which is nearer to the true value of half an *As*; or had it paſſed for 6, he would have ſaid one ſixth, which is ſtill nearer; in either caſe, he would not have ſaid one fourth, as neither 10 nor 6 admits of that diviſion. But though, when Polybius wrote, the Obole might paſs for 8 Chalci, it is not impoſſible that at different times, or in different places, it may have paſſed for 6, 10, and 12.

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(5) Ariſtoph. Eccleſ. ver. 810 and the following.

(6) Theophraſt. περὶ ἀπόνοιας, and περὶ βδελυρίας. Demoſthenes c. Midiam. Athenæus, L. III. c. 32, and elſewhere. Pollux, L. IX. c. 6. § 65.

(7) Pembroke Coll. P. II. T. 48.

(8) Vitruv. L. III. c. 1.

(9) Suidas, v. Ὀβολός. v. Τάλαντον. and one of the fragments in the appendix to Stephens's Greek Theſaurus, col. 217.

(1) Pollux, L. IX. c. 6. § 65, 67. Suidas, v. Τεταρτημόριον. The fragments aſcribed to Galen and to Cleopatra in Stephens's Greek Theſaurus, col. 215, 217. That aſcribed to Dioſcorides ſays, the third part. Theſe fragments ſpeak of it as a weight, not a coin.

(2) Pliny, Nat. Hiſt. L. XXI. near the end of the laſt chapter.

(3) Polybius, L. II. p. 103. of Caſaubon's edit.

It is a common opinion, that the Athenians coined gold, for which I can find no good authority; and from the beſt information I have been able to get, there does not appear to be any Attic gold coin now remaining, that was ſtruck while they were a free and flouriſhing people.

See Mr Clarke p. 13

The lexicographers, indeed, tell us, the Χρυσοῦς Ἀττικὸς was equal to the Daric (4), and ſpeak of gold mines at Laurium (5); but no ancient writer mentions ſuch a coin, and all agree that the mines at Laurium were ſilver (6).

A paſſage in the Frogs of Ariſtophanes is, I believe, the only poſitive proof that can be produced from any ancient author in favour of this opinion. In ver. 732 of that comedy, he mentions a new gold coin. The ſcholiaſt on this paſſage tells us, that in the Archonſhip of Antigenes, the Athenians coined their golden images of Victory; and the author of the treatiſe Περὶ ἑρμηνείας, § 298, praiſes an orator for the happy choice of his expreſſion, when he propoſed this expedient; but he neither mentions the orator's name, nor the time when this happened, nor whether the Athenians followed his advice; though the ſcholiaſt's ſhort quotation from Philochorus ſeems to imply that they did. But if in ver. 732. above mentioned, for χρυσίον, we read χαλκίον, it will agree better with ver. 737. where the Poet calls this money πονηρὰ χαλκία; and the ſcholiaſt on theſe words ſays, *perhaps the Poet means the copper money of Callias*; and this comedy was acted in his ſecond Archonſhip, when that copper money was coined.

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(4) Pollux, L. IX. c. 6. § 53. Suidas, v. Γλαῦξ. v. Δαρεικός. Harpocratio, v. Δαρεικός.

(5) Suidas, v. Γλαῦξ. Heſychius, v. Λαύρεια.

(6) Thucyd. L. II. § 55. and L. VI. § 91. Xenoph. περὶ προσόδων. Strabo, L. IX. p. 399, and Pauſanias at the beginning of his firſt book.

That they had no gold coin at the beginning of the Peloponneſian war, appears from the account Thucydides gives of the treaſure then in the Acropolis, which conſiſted of ſilver in coin, and gold and ſilver bullion (7); but he would certainly have mentioned gold in coin, had there been any.

Therefore the ἀρχαῖον νόμισμα of Ariſtophanes could not be gold, nor the baſe καινὸν χρυσίον of equal value with the Daric; whence I conclude, καινὸν χαλκίον to be the true reading; and that it was the copper money above mentioned, which was afterward cried down.

Athenæus tells us that gold was extremely ſcarce in Greece, even in the time of Philip of Macedon; but that, after the Phoceans had plundered the

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(7) Thucyd. L. II. § 13.

Pythian temple, it ſhone forth among the Greeks (8). Philip conquered theſe Phoceans, and put an end to the holy war, as it was called.

About the time this war broke out, he took the city Crenides, on the borders of Thrace, which he enlarged, and called Philippi, after his own name; and he ſo improved the gold mines in its diſtrict, which before were of ſmall account, that they produced above a thouſand talents yearly, and enabled him to coin gold, which he called Philippics (9).

What Athenæus ſays of the ſcarcity of gold, may be true, if confined to Macedon, and the poorer ſtates of Greece; but muſt not be extended to Corinth or Athens; for though Thucydides does not ſpecify the quantity of gold that was in the Athenian treaſury at the beginning of the Peloponneſian war, it was, probably, not inconſiderable; for the gold about the ſtatue of Minerva weighed 40 talents, which valued (according to Herodotus) at 13 times its weight in ſilver, will be found to amount to above 120,000 pounds ſterling.

There is a gold coin in the Britiſh Muſeum, of elegant workmanſhip, with the head of Minerva on one ſide, and the owl and oil bottle on the other, the inſcription ΑΘΕ, and under the oil bottle the letters MH. It weighs 109½ Troy grains; but being a little worn, it probably, when new, came up to the juſt weight of the Roman Imperial Aureus. Whence we may conclude, that, when this piece was ſtruck, the Athenians had reduced their money to the

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(8) Athenæus, L. VI. p. 231. See Diodorus, L. XVI. p. 527. Stephens's edit. (9) Diodorus, L. XVI. p. 514.

Roman ſtandard, and that their Drachm was then equal to the Denarius. But I cannot find there is any Attic gold now extant, that was coined before Greece became ſubject to the Romans.

The Perſian Daric ſeems to have been the gold coin beſt known at Athens in ancient times. This they called Stater (1), probably becauſe it was the ſtandard to which their Drachm was originally adjuſted, which the Lexicographers tell us was half its weight (2).

Though Greaves ſays, the Daric is ſtill found in Perſia, it is certainly very ſcarce, and perhaps of doubtful antiquity.

For want, therefore, of the Daric, we muſt have recourſe to the gold of Philip, who took either that coin or the Attic Drachm for his ſtandard; as will appear, when I come to compare his money, and that of his ſon Alexander, with the Attic ſilver. This he probably did, with a view to his intended invaſion of Aſia; for the ancient ſtandard of Macedon was very different from that of Athens, as I ſhall ſhew hereafter.

Philip and his ſon Alexander coined gold of 4, 2, 1, and half an Attic Drachm. Mr. Duane hath a coin of Berenice, the wife of the ſecond Antiochus, weighing a quarter of a Drachm. In the Pembroke collection is a gold medal of Lyſimachus, of 8 Drachms; and Mr. Duane hath another of the like weight. But the Daric or *χρυσοῦς* was didrachmal, and there are more of that ſpecies now remaining, than of any other.

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(1) Herodotus, L. VII. § 28. and Thucyd. L. VIII. § 28. call it *Στατὴρ δαρεικός*.

(2) Pollux, L. IV. c. 24. Heſychius, v. *Χρυσοῦς*.

In the Britiſh Muſeum are three gold coins of Philip, which have all the ſharpneſs of new money freſh from the mint. The heavieſt of them weighs above 132$\frac{3}{5}$ Troy grains. A fourth, in the ſame collection, hath a hole punched through it; but in other reſpects, ſeems as perfect as the reſt, and is the heavieſt but one, of the four. There is likewiſe, a double Philippic of Alexander, perfect and unworn, which weighs 265$\frac{3}{10}$ grains.

There are two more of Philip, in this collection, each weighing 132 grains, one of Alexander, of 132$\frac{2}{5}$, and another of 131$\frac{3}{5}$; but theſe are all a little worn, therefore I ſhall make no uſe of them.

Mr. Stuart brought home a Philippic, which, though not ſo fair in appearance as the beſt in the Britiſh Muſeum, weighed 133$\frac{7}{10}$ grains.

Out of ſeven of the moſt perfect gold coins of Philip and Alexander, in Mr. Duane's collection, four weighed 133 grains each. He hath a moſt beautiful coin of Alexander of Epirus, brother to Olympias, the mother of Alexander the Great, weighing 132$\frac{1}{3}$ grains; the workmanſhip is exquiſitely fine, and as perfect as when it was firſt ſtruck.

Greaves tells us, he bought at Alexandria a Philippic of Alexander, which he thought the faireſt in the world, weighing exactly 133$\frac{1}{2}$ Engliſh grains. But, to bring it up to the ſtandard of his Tetradrachm of 268 grains, he ſuppoſes it might want half a grain, either by time, or the mint (3). His mentioning the mint ſhews, he could not diſcern any appearance of wear upon it, therefore I ſuppoſe it was perfect.

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(3) Greaves, p. 72.

He found two of the ſame weight in the poſſeſſion of Sir Simonds D'Ewes.

He bought another at Conſtantinople, which weighed 133 grains; with which comparing one of Sir John Marſham, he found the latter a grain deficient.

He quotes Snellius for two gold coins, one of Philip, the other of Alexander, each weighing 179 Dutch grains, which, he ſays, anſwer to $134\frac{1}{2}$ Engliſh (4). But in this he is miſtaken, for they anſwer to no more than $132\frac{17}{20}$ (5). Snellius, to favour an ill founded hypotheſis of his own, ſuppoſes they had loſt ſomewhat of their firſt weight (6), but does not ſay they had any ſuch appearance; and as they outweigh the heavieſt in the Britiſh Muſeum, it is probable they were perfect.

In the Pembroke collection are two gold coins, one of Philip, weighing 134 grains, the other of

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(4) P. 71.

(5) Eiſenſchmid, p. 16, ſays, Budelius, who was maſter of the mint at Cologne, found the money-ounce uſed in Flanders and the United Provinces, to weigh $579\frac{1}{5}$ Paris grains (equal to $475\frac{1}{8}$ Troy) and that Gaſſendus found it but 577. See alſo the Memoires of the Royal Academy of Science, for the year 1767. pp. 364, 370. I weighed the Dutch half marc of 4 ounces, from Amſterdam, in an excellent balance, and found it to weigh 3 ounces, 19 p. weight, and 4 grains Troy; which divided by 4, gives 19 p. weight, 19 grains, or 475 Troy grains, for the weight of the Dutch ounce. This ounce contains 640 Dutch grains; and

As 640 to 179, ſo are 475 to $132\frac{17}{20}$, the weight of Snellius's coins.

(6) See Snellius de re nummaria, Vol. IX. of the Theſaurus Antiquitatum Græcarum, col. 1583.

Alexander, weighſng 266, which, by their weights, ſhould be perfect

The difference between the heavieſt and the lighteſt of theſe pieces ſuppoſed to be perfect, does not amount to two grains in the Philippic; and a mean, taken from ſuch a number of coins, ſo equally ſized, muſt be very near their original ſtandard weight.

In the following table, I have not inſerted any piece, that I had reaſon to believe was ſenſibly deficient of its original weight. Therefore I have omitted Sir John Marſham's coin of 132 grains, which being deficient of the leaſt weight I have found in any perfect piece, it is moſt probable it was a little worn. I have likewiſe omited three coins in the Pembroke collection, of 132 grains each, for the ſame reaſon.

The pieces under the letter M, are from the Britiſh Muſeum; thoſe under D, from Mr. Duane's collection; that marked S, Mr. Stuart's; G, is the mark for thoſe mentioned by Mr. Greaves; Sn. for the two of Snellius; and P, for two from the Pembroke collection. The parts of a grain are given in decimals, for the convenience of adding them.

	Troy grains.
Philip . . M.	132,62
	132,23
	132,08
with a hole	132,46
Alexander . .	265,3
Philip . . . D.	133
	133
	133
Alexander . . .	133
	132,5
	132,5
	265,5
Philip . . . S.	133,7
Alexander . G.	133,5
	133,5
	133,5
	133
Philip . . . Sn.	132,85
Alexander . . .	132,85
Philip . . . P.	134
Alexander . . .	266
	24)3190,09
Mean Philippic	132,92

As none of theſe pieces can have increaſed their original weight, but, on the contrary, ſome may have loſt a ſmall part of it, we may fairly conclude, that the ſtandard weight of the Philippic was not leſs than 133 Troy grains; but probably ſomewhat greater.

In the Pembroke collection is a gold coin, or rather medal, of Lyſimachus, weighing 540 grains. Mr. Duane hath another of them, which wants but $2\frac{2}{5}$ grains of the ſame weight. This piece ſhould weigh 8 Drachms, and is of great importance on that account, as large weights and meaſures are more to be depended on, in inquiries of this kind, than ſmaller. According to this coin the Philippic ſhould weigh 135 grains, and the double Philippic 270: but none have yet been found to come up to theſe weights. Some few ſilver Tetradrachms exceed 270 grains, but they are very uncommon, and far the greateſt number of ſuch as ſeem moſt perfect, full ſhort of 266. Neither is the ancient ſilver ſo correctly ſized, as to ſtand in competition with the gold of Philip and Alexander. Therefore, either the mint-weights of Lyſimachus were heavier than the Philippic ſtandard, or his money was leſs carefully ſized: or, laſtly, this piece, being intended rather for a medal than a coin, was purpoſely over ſized.

The ſilver coins of Philip and Alexander confirm what the lexicographers tell us, that the golden Stater of Philip weighed two Drachms.

In the Britiſh Muſeum is a Drachm of Philip, weighing $67\frac{3}{10}$ grains, and another of Alexander of $66\frac{3}{5}$, both perfect. In the Pembroke collection is one of Alexander, which weighs 67 grains. Theſe give a Didrachm of $134\frac{3}{5}$, $133\frac{1}{5}$, and 134 grains.

Seven

$267\frac{1}{2}$ Seven perfect Tetradrachms of Alex-
266 ander, out of a much greater number,
$265\frac{1}{2}$ in Mr. Duane's collection, give a mean
$264\frac{1}{2}$ Didrachm of a little more than $132\frac{1}{2}$
$264\frac{1}{2}$ grains, as in the margin; which
264 anſwers near enough to the gold
$263\frac{1}{2}$ coins, to prove, that the Drachm was
——— the common ſtandard, both for the
$14)1855\frac{1}{2}$ gold and ſilver money.
———
Mean $132\frac{1}{2}+$

I ſhall now ſhew, that this was the Attic Drachm.

The ſilver Stater, or Tetradrachm, is the moſt common Attic coin now remaining, and ſome of them are in very perfect preſervation. They all have the head of Minerva on one ſide, and an owl on the other, with the inſcription ΑΘΕ. Eiſenſchmid obſerves, that they appear, by the workmanſhip, and other circumſtances, to be of different ages (7).

The moſt ancient are very rude work (8), of a ſmall diameter and thick. He had one of them in the moſt perfect preſervation, weighing $273\frac{1}{6}$ Troy grains; and there is one like it in the Britiſh Muſeum of $272\frac{9}{10}$ grains.

The ſecond ſort is ſomewhat better work, though rude, and the owl ſtands in a ſquare; but in other reſpects is like the former. The eighth and ninth coins P. II. T. 48. of the Pembroke collection, ſeem to be of this ſort. The eighth weighs 266 grains; and by having the weight put to it, and not to either of the other two in the ſame plate, I ſuppoſe it is well preſerved, and perhaps perfect. Theſe and the above mentioned have an olive branch coming from the edge to the owl; and both, by the rudeneſs of the work, ſhould be older than the time of Pericles, under whoſe adminiſtration ſculpture flouriſhed at Athens.

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(7) Eiſenſchmid, p. 44.

(8) See Eiſenſchmid's figure, and c. 7. of P. II. T. 48. of the Pembroke collection.

The work of a third ſort is more elegant, though not highly finiſhed. Its diameter is equal to that of an Engliſh half crown. The face of Minerva is beautiful; the owl ſtands on an oil bottle, and is encompaſſed by two olive branches, and, beſides the inſcription ΑΘΕ, hath ſome monograms and ſymbols near the owl.

A fourth ſort, of the ſame ſize, is generally higher finiſhed; and beſides the inſcription ΑΘΕ, hath inſtead of the monograms, a name or names about the owl, perhaps of the mint-maſters, or, as Mr. Stuart conjectures, of the owners of the mine that produced the ſilver. Theſe likewiſe have commonly ſome ſymbol near the owl. Some of them have a letter on the belly of the oil bottle, and two letters under it, as it were in an exergue. They ſeem to be of a later date than the laſt mentioned; for none that I have ſeen have the Ε for Η, or the Ο for Ω in the names, though they retain the Ε in ΑΘΕ; but the long vowels did not come into uſe at Athens till after the Peloponneſian war, as appears by inſcriptions now remaining,

ing (9), therefore, theſe muſt have been ſtruck after that time; and if any now remain, that were ſtruck during that war, they muſt be thoſe with monograms.

The Attic money is not ſo equally ſized as the Philippic ſilver. Mr. Duane hath a Tetradrachm with the letter K on the oil bottle, and ΔI under it, inſcribed ΜΕΝΤΩΡ ΜΟΣΧΙΩΝ, which weighs 271¾ grains, and another with the ſame letters on and under the oil bottle, inſcribed ΚΛΕΟΦΑΝΗΣ ΕΠΙΘΕΤΗΣ, in as perfect preſervation, which weighs but 265 grains.

An Attic Tetradrachm in the Britiſh Muſeum, which appears to be but little worn, and not otherwiſe diminiſhed, weighs but 247½ grains. We can hardly ſuppoſe, that this was ſtruck to the ſame ſtandard as Eiſenſchmid's ancient Tetradrachm of above 273 grains. That in the Pembroke collection, of 207 grains, hath probably been filed on the edge.

There are, however, a conſiderable number of Attic Tetradrachms, that anſwer in weight to thoſe of Philip and Alexander, as nearly as can be expected, from coins ſo unequally ſized. Mr. Stuart brought a very ancient one from Greece, weighing 265½ grains; Mr. Duane hath one of the like age, which weighs 265¼; they are both well preſerved, and can have loſt very little of their original weight: one, with a monogram and ſymbol, of 266¾ grains; another, inſcribed +ANI of the ſame weight, two of 265 grains, and one of 265¼. Theſe anſwer ſo nearly to the weights of Alexander's Tetradrachms, that we cannot doubt of the equality of his ſtandard to that of Athens. And the gold Philippics of him and his father are ſo correctly ſized, and ſo perfect, that the mean Didrachm derived from them, of 133 Troy grains, muſt be very near its juſt weight; and its half, 66½, that of the Attic Drachm.

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(9) See Montfaucon's Palæographia Græca, p. 135. and the Marmor Athenienſe, lately publiſhed by Mr. Chambers. The Scholiaſt on ver. 688 of Euripides's Phœniſſæ dates the introduction of the long vowels into Athens, in the Archonſhip of Euclides.

§ II. *Of the Eginean and Euböic Talents.*

THE Attic was not the only money-talent uſed in Greece. Hiſtorians and others mention the Eginean and the Euboic Talents. The former weighed 10000 Attic Drachms, but, like other Talents, contained only 6000 of its own; which being ſo much heavier than the Attic, the Athenians called it παχεῖαν δραχμὴν, or the thick drachm (1). This Talent was uſed at Corinth, as appears by a paſſage in A. Gellius, where the Corinthian Talent is valued at 10000 Attic drachms (2): and as Corinth was a place of great trade, it was probably uſed in moſt of the cities of the Peloponneſus.

If the Attic Drachm weighed 66½ Troy grains, the Eginean ſhould weigh $110\frac{5}{6}$; which, to avoid fractions, and becauſe our Attic Drachm is rather underſized than otherwiſe, I ſhall call 111.

There are Macedonian coins, ſtruck before Philip coined gold, that anſwer to this ſtandard. One of Philip, in the Pembroke collection, weighs 224 grains.

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(1) See Pollux, L. IX. c. 6. § 86 and 76.
(2) A. Gellius, L. I. c. 8.

Mr. Duane hath a ſilver coin, of either the firſt or ſecond Alexander, which weighs 447½ grains; three of Philip, of 221 each; another of Philip, of 223¼; and a fifth, 223¾. The mean Drachm from theſe ſix coins is 111¼ grains, which comes as near to the Eginean drachm, as can be expected from ſo ſmall a number of ſilver coins. Therefore, the Eginean Talent muſt have been the ſtandard of the Macedonian money, till Philip changed it.

It appears likewiſe to have been the ſtandard of the Ptolemaic money in Eygpt. Mr. Duane hath a gold coin of the Ptolemies, like c. 1. T. III. of the Pembroke collection, weighing nearly 27½ grains; Mr. Stuart another, weighing 27$\frac{3}{20}$: ſuppoſing each was a quarterof the Drachm, the former will give it almoſt 110 grains, the latter 108½; but they are both a little worn. Mr. Duane hath a gold coin of Arſinoë, like c. 3. T. III. of the Pembroke collection, which weighs 430 grains; and Dr. Hunter hath another of the ſame weight, which give a Drachm of 107½ grains. Dr. Hunter hath likewiſe a perfect ſilver coin of one of the Ptolemies, weighing 221 grains, another of 220, and a third of 109¼; but the two laſt are a little worn. The Ptolemaic gold coins in the Pembroke collection give the Drachm from 107 to 108 grains. As the piece of 221 grains wants but half a grain in the Drachm of the Eginean ſtandard, and that of 107 but four grains, we may fairly conclude that Talent to have been the money ſtandard of the Ptolemies. And not only ſo, but that it was originally Egyptian. For what ſhould induce Ptolemy, to relinquiſh the ſtandard eſtabliſhed by Alexander, and uſed all over Aſia and the greater part of Greece, but that he found the Eginean Talent eſtabliſhed in Egypt, when he poſſeſſed himſelf of that opulent kingdom.

Yet ſo imperfect are the accounts now remaining, of the ancient weights, that no writer hath mentioned this Talent, or one like it, as uſed in Egypt. On the contrary, Pliny tells us, on the authority of Varro, that the Egyptian Talent weighed 80 Roman pounds (3). But this is undoubtedly a falſe reading, and for *Ægyptium* we ſhould read *Euboïcum*; for Pliny is ſpeaking of the riches of Aſia, where the Euboïc Talent was uſed for weighing gold; and we know the weight of that Talent was ſettled at 80 Roman Pounds, by the treaty between the Romans and Antiochus.

Ægyptium is right, the
same with Alexandrine, at
first 5 times 20 pounds, or
100, wch the first great commer-
cial wt. wth wch the Romans were
acquainted with, but they dropped
the use of the Talent in ~~[illegible]~~
~~of~~ traffick, and introduced the
centenarium or a hundred pound
weight, instead of it. In
this money pound they used
~~[illegible]~~ what was called
Talentum magnum, of 5 times
16 or 80 pounds, instead 5 times
12 pounds. This was all that
was agreed between Antiochus and
the Ro= The Talent bore always the
same proportion to that
pound wch was the basis
of the computation i.e.
all were sixty pounds
of their own weight, in the rate of ounces.
The nummulary talent
from a pound of twelve oun-
ces was five times twelve
or sixty pounds; By the
Roman the commercial pound
from a pound of XVI ounces,
was five times XVI ounces
~~was five times XVI~~ or eighty
ounces: the great Alexandrian
talent, from a pd of 20
oz. was 5 times 20 or
a hundred pds. Clarke on
Coins c. V. p. 375. note.

The fragment of weights and meaſures aſcribed to Galen, makes the Egyptian Mina to weigh 16 Ounces (4); and conſequently, the Talent 80 Roman Pounds. But this Talent could not be the ſtandard of the Ptolemaic coins.

There is a paſſage in Pollux which makes the Egyptian Talent contain 1500 Attic Drachms (5). But this is an injudicious interpolation in the laſt edition of that author.

The fragment aſcribed to Cleopatra, and one that follows it, mention a Ptolemaic Mina of 18 Ounces, whoſe Drachm ſhould weigh $75\frac{3}{5}$ Troy grains; and Cleopatra ſays, there was an Egyptian Drachm, which weighed but the ſixth part of the Attic.

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(3) Nat. Hiſt. L. XXXIII. c. 3.
(4) Stephani Theſ. Græc. t. IV, col. 25.
(5) L. IX. c. 6. § 86.

Galen (6) and the fragment aſcribed to Dioſcorides ſay, the Mina of Alexandria weighed 20 Ounces, or 120 Drachms. By Drachms, Galen certainly meant Denarii of 8 in the Ounce; for he tells us, that, in his time, a Drachm was always underſtood to mean what the Romans call a Denarius (7). The Drachm of this Mina ſhould weigh 84 grains.

Laſtly, Feſtus ſays, the Alexandrian Talent contained 12000 Denarii (8). If by Denarii he meant Attic Drachms, this Talent ſhould be juſt double the Attic.

None of theſe talents could be the ſtandard of the Ptolemaic money. Though, if Galen's Alexandrian Mina weighed 160 ancient Attic Drachms, its Drachm would weigh $106\frac{2}{3}$ Troy grains, which comes near to the Ptolemaic ſtandard. But the coins require a greater weight, and the Eginean Mina ſhould weigh $166\frac{2}{3}$ Attic drachms.

The Euboïc Talent certainly came from Aſia; for, Herodotus tells us, the Kings of Perſia weighed their gold by that Talent (9). In the ſame place he informs us, that the Babylonian Talent weighed 70 Euboic Minas. Pollux ſays, it weighed 70 Attic Minas (1). Therefore the Euboïc Talent ſhould be equal to the Attic.* But Ælian tells us, it weighed And so. Mr. Clarke makes it, p. 395

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(6) See the word Μνᾶ in the index to Stephens's Greek Theſaurus.

(7) Πρόδηλον ὅτι δραχμὴν λέγομεν νῦν ἐν τοῖς τοιούτοις ἅπασιν, ὅπερ Ῥωμαῖοι δηνάριον ὀνομάζουσιν. Galen, L. VIII. De compoſ. medicam. as quoted by Gronovius, L. II. c. 6. De Pecun. Vet.

(8) Feſtus, De Verborum Signif. v. TALENTUM.

(9) Herod. L. III. § 89. (1) Pollux, L. IX. c. 6. § 86.

72 Attic Minas (2); and if ſo, the Euboïc Talent ſhould be heavier than the Attic, in the proportion of 72 to 70.

An article in the treaty between the Romans and Etolians, recorded by Polybius (3), whereby the latter were to pay a certain number of Euboïc Talents, in ſilver of Attic fineneſs, ſeems to favour this inequality of the two Talents: for, had they been equal, there would have been no occaſion to ſpecify the quality of the ſilver by the ſtandard of one country, and its weight by that of another.

But, if the Euboïc Talent was the ſtandard uſed in the commerce between Greece and Aſia (as it ſeems to have been) both countries were concerned to keep it up to its juſt weight; which was a ſufficient reaſon for the preference given to it by the Romans, on account of its authenticity, whether the Attic Talent was equal to it or not.

And there is a circumſtance very ſtrongly in favour of their equality, which is, that if Philip changed the money-ſtandard of his own country, with a view to the invaſion of Aſia, (as is highly probable), he certainly adopted the ſtandard of the Daric, which was the Euboïc Talent, by which the Kings of Perſia weighed their gold. But his money anſwers to the Attic Talent, as I have ſhewn above.

Pollux no where mentions the Euboïc Talent; and if he took his eſtimate of the Babylonian Talent from Herodotus, he certainly thought the Euboïc Talent was equal to the Attic.

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(2) Var. Hiſt. L. I. c. 22.

(3) Polyb. Excerpt. Legat. § 28.

But the numbers in the account Herodotus hath given of the revenue of Darius, as they now ſtand, diſagree with each other, and muſt be faulty in more places than one; and as probably in his value of the Babylonian Talent as elſewhere.

He tells us, the King of Perſia weighed his ſilver by the Babylonian Talent; therefore, that muſt have been reckoned the ſilver Talent of the empire, and was probably the ſtandard of their ſilver coin.

Xenophon, in his account of the expedition of Cyrus, ſays, the Aſiatic Siglus was worth $7\frac{1}{2}$ Attic Oboles (4). This coin ſeems to have been the Drachm of the Babylonian Talent; and if that Talent weighed 72 Attic Minas, the Siglus was really worth but $7\frac{1}{5}$ oboles; but the place Xenophon here ſpeaks of was near Babylon, where the Attic money was unknown and conſequently undervalued in common currency, This however ſhews, that, if the Babylonian Talent was the ſtandard for the ſilver coinage in Perſia, its weight probably exceeded 70 Attic Minas.

The ſame author tells us, that Cyrus paid Silanus the Ambraciot 3000 Darics for ten Talents. Thereſore, the Talent of ſilver was worth 300 Darics. And if 3000 Darics were coined out of the Euboïc Talent of gold, 300 weighed ſix Euboïc Minas: and ſuppoſing the Babylonian Talent to weigh 72 ſuch Minas, the price of gold, at that time, was twelve times its weight in ſilver, as Plato, who was Xenophon's contemporary, tells us it was (5).

By the former of theſe paſſages, it appears probable that the Babylonian Talent weighed above 70

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(4) Xenoph. Exped. L. I. (5) Plato, in his Hipparchus.

Attic Minas; by the latter, that it weighed above 70 Euboïc Minas; and if Pollux took his value of the Babylonian Talent from Herodotus, as the text now ſtands, and Ælian his value of the ſame, from a more correct copy of that author, or from ſome better authority, the Euboïc Talent muſt have been equal to the Attic.

§ III. *Of the Roman Money.*

PLINY hath given the following hiſtorical account of the Roman coinage: "Silver was firſt "coined at Rome in the 485th year of the City, "when Q. Ogulnius and C. Fabius were Conſuls, "five years before the firſt Punic war. And the "denarius was made to paſs for ten pounds of copper; the quinarius, for five; and the ſeſterce, for "two and a half. But the weight of the *As* was "reduced in the firſt Punic war, when the republic, "being unable to defray its expences, reſolved to "coin ſix *Aſſes* out of the pound; whereby they "gained five parts, and paid their debts. The "ſtamp of the *As* was a double-faced Janus on one "ſide, and the prow of a ſhip on the other: on the "triens and quadrans a boat. After this, when they "were preſſed by Hannibal, Quintus Fabius Maximus being dictator [*about the year* 537], the *As* "was reduced to one ounce, and the ſilver denarius "made to paſs for 16 *Aſſes*; the quinarius, for eight; "and the ſeſterce, for four. And the republic gained "one half [*upon the copper money*]. But in the pay

Why a boat? In triente et quadrante RATES. which signifies a Ship, usually; but probably here their rate or value, which was stamped upon them in this manner, Triens thus: 0000. Quadrans thus: 000. as Mr. Folkes interprets in Montesquieu's Rise and Fall of the Roman Empire, 3d Edit. Ovid Fasti preserves the same ambiguity — aes navalis forma for the As; causa Ratis, for the Triens and Quadrans. — As the representation is not like a boat, the other Interpretation seems to me more natural

" of the army, the ſoldier always received a *ſilver*
" denarius for ten *Aſſes*. The ſtamp of the ſilver
" money was a chariot and a pair, or a chariot and
" four horſes; whence they were called *Bigati* and
" *Quadrigati*. The *As* was ſoon after reduced to half
" an ounce, by the Papirian Law.——What is now
" called the Victoriat, was coined by the Clodian Law;
" before which, it was imported from Illyricum as
" merchandize: its ſtamp is a Victory, whence it
" takes its name. The gold money was coined ſixty
" two years after the ſilver, and the ſcruple paſſed
" for twenty ſeſterces, which, as the ſeſterce was
" reckoned at that time [2½ *Aſſes*], made the pound of
" gold worth nine hundred *ſilver* denarii (1) [*of* 16
" *Aſſes each*]. It was afterward thought proper to coin
" forty pieces out of the pound of gold. And our
" Princes have, by degrees, diminiſhed their weight
" to 45 in the pound (2)."

Thus far Pliny, whoſe date of the firſt coinage of ſilver is confirmed by Livy (3).

The Denarii now remaining are of various kinds. The moſt ancient are the *Bigati* and *Quadrigati*, having on one ſide the head of a woman in a helmet, with the inſcription ROMA, and the mark of the Denarius X or 𐆖, and ſome few XVI, and a Biga or Quadriga on the other. The next to theſe in antiquity have the head of Roma, or ſome other Deity, on one ſide, and on the reverſe, the name of the mintmaſter, or mintmaſters, with hiſtorical or emblematical figures. Many of theſe have the X or 𐆖, which continued to be the mark of the Denarius long after it paſſed for 16 *Aſſes*; whence ſome have concluded that it was reduced again to ten *Aſſes*, contrary to the expreſs teſtimony of Vitruvius (4); and Tacitus tells us that the mutinous legions in Pannonia demanded, to have their pay raiſed from ten *Aſſes*, to a Denarius. A third ſort hath the head of a Conſul or a General on one ſide, with an hiſtorical or emblematical reverſe. Few, if any, of theſe have the mark X or 𐆖 upon them. Theſe three ſorts are called Conſular Denarii, as having been ſtruck during the republican government by Conſuls. The Imperial Denarii have commonly the head of the reigning Emperor, with his name and titles on one ſide, and ſome emblematical figures on the reverſe, with a ſuitable inſcription.

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(1) The common reading is ſeſtertios DCCCC, which I ſhall conſider hereafter.

(2) Plin. Nat. Hiſt. L. XXXIII. c. 3. In moſt editions of Pliny before Hardouin, the numbers 40 and 45, are thus written X. XL. M. and X. XLV. M. whence Agricola and Snellius have ſuppoſed the M. after the former number, to be a miſtake of the tranſcriber for II. and that after the latter for III. But Hardouin in his note on this paſſage hath ſhewn the M. in both places, to be ſuperfluous. In the laſt clauſe, I read *minutiſſimè vero*, not *minutiſſimè Nero*.

(3) See the epitome of L. XV.

p. 59.

But why minutissime, when Greaves discovered in MS. imminuisse vero ad XLVIII, which is more suitable to AD. Why should this [illegible] desert authority?

The Romans coined their firſt gold money by the Scruple, as appears from Pliny's account, which is confirmed by the coins; for he tells us the Scruple paſſed for twenty Seſterces, and the rare gold coins now remaining with the numerals XX, and XXXX, which anſwer to the weight of one, and two ancient Roman Scruples. Theſe have the head of Mars on one ſide, with the numeral letters denoting their value, and, on the reverſe, an Eagle ſtanding on a Thunderbolt. The latter coins of this ſcrupular ſtandard are like the Denarii of the age in which they were ſtruck; as was the gold of the different ſtandards that ſucceeded it.

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(4) Vitruvius, L. III. c. 1. So likewiſe Voluſius Mætianus. Taciti Annal. L. 1. § 17. & 26.

The Romans did not uſe the Denarius for a weight, as the Greeks did their Drachm; till the Greek phyſicans coming to Rome, and finding the two coins nearly equal, preſcribed by it, as they had been accuſtomed to do by the Drachm in their own country. Neither did the Roman Pound depend on the weight of the Denarius, as the Greek Mina did on that of the Drachm; but the weight of the Denarius depended on the Pound.

The antient Roman Pound was divided into 12 Ounces, and the Ounce into 24 ſcruples (5). And we learn from Celſus and Pliny, that 84 Denarii were coined out of the Pound of ſilver (6); therefore, if we knew the true weight of the Roman Pound, we ſhould thence know that of the Denarius.

There are many antient Roman weights now remaining, from under an Ounce to 100 Pounds (7); ſome of them with inſcriptions have the appearance of ſtandards.

Lucas Pætus, from an antient weight of 10 Pounds, another of 4 pounds, and a third of 1 pound, inſcribed EX. AVC.D.CAS. in letters of ſilver, beſides three ſmaller of 3, 6, and 9 ounces, all ſix perfect and agreeing together, determined the antient Pound to contain 11 ounces, 10 ſcruples, modern Roman weight (8). But where he gives the weight of Veſpaſian's Congius (9), he makes ten antient Roman Pounds to weigh 9 pounds 6 ounces 10 ſcr. 10 gr. modern weight. The modern Roman ounce contains, like the antient, 24 ſcruples, the ſcruple 24 grains. Therefore, according to this determination, the antient Roman Pound ſhould weigh 11 ounces, 10 ſcr. $15\frac{2}{3}$ gr. modern weight, which is equal to $5012\frac{1}{3}$ Troy grains, if the exact weight of the modern Roman ounce be 438 Troy grains, as Greaves reckons it. But Pætus uſed a ſteelyard, which is a very fallacious inſtrument.

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(5) Varro de Re Ruſtica, L. I. c. 10. Columella, L. V. c. 1. and Voluſius Mæcianus.

(6) Celſus de Medicina, L. V. c. 17. Pliny, Nat. Hiſt. L. XXXIII. c. 9.

(7) See Theſ. Antiq. Roman. Vol. XI. col. 1661.

Gruter hath exhibited a conſiderable number of ancient Roman weights (1). Such of marble, from 1 to 10 pounds, as were intire, have neither mark nor inſcription. His two heavieſt weigh 9 pounds 8 ounces each, modern Roman weight, which give an antient Pound of 5081 Troy grains. Such of the reſt as are ſuppoſed to be intire, make it under 5000. His leſſer weights vary conſiderably. The Triens of Ruſticus gives a pound of 5092 Troy grains; his Sextans one of 5246. Among the braſs weights are two inſcribed AD. AVGVST. TEMP. C. P. One of five Pounds, weighing 5 pounds $2\frac{1}{2}$ ounces, makes the ancient Pound equal to 5475 Troy grains; the other is a Triens, and weighs 3 ounces, 19 ſcr. 4 gr. which gives 4992 Troy grains for the Roman Pound.

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(8) Theſ. Antiq. Roman. Vol. XI. col. 1619.

(9) Ibid. col. 1635.

(1) Gruter's Inſcriptions, p. ccxxi.

Fabretti blames Pætus for making the ancient Roman Pound lighter than the modern (2), and produces ten ancient weights, to prove the contrary. Three of them are of braſs, and by their inſcriptions have the appearance of public ſtandards. One, with the mark X, weighs 10 pounds 5 oz. 14 ſcr. modern Roman weight, which, reduced to Troy grains, give 5500½ for the antient Pound. Another, marked V, weighs 5 pounds, 2½ oz. and gives 5475 Troy grains for the antient Pound. A third marked II, weighs 2 pounds, 1 oz. 9 ſcr. which makes the ancient Pound amount to 5557 Troy grains. His white marble weight hath no other inſcription but the mark I, for one pound, and weighs 13 ounces, 1½ ſcr. equal to 5721 Troy grains. The reſt of his weights are from five ounces to three ſcruples, and give an ancient Roman Pound from almoſt 5500 Troy grains to above 5780.

At the end of Eiſenſchmid's preface, we find two *Aſſes librales*, one equal to 5407½ Troy grains, the other to 5315⅝; and a *Quadruſſis* of 21351 Troy grains, which gives a pound of 5337¾.

According to Fabretti's weights, the ancient Roman Pound could not weigh leſs than 5475 Troy grains, which is much greater than can be derived from any other evidences, as I ſhall ſhew hereafter. But, as many of the abovementioned weights have the appearance of public ſtandards, I have thought proper, to take more particular notice of them, than writers on this ſubject have commonly done.

Both Villalpandus and Greaves relied on the Congius of Veſpaſian for the ſtandard weight of the

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(2) Fabretti Inſcript. p. 523.

Roman Pound, not doubting its authenticity, though the note in Gruter ſays, ſome have ſuſpected it (3). What foundation they had for ſuch ſuſpicion, does not appear; but it is very difficult, to counterfeit the genuine cracks and corroſions of antiquity, in a veſſel of this kind; and Greaves tells us, that while he was in Italy, there was found, among the ruins at Rome, a Semicongius in braſs, of the ſame figure with this of Veſpaſian, the ſides much corroded with ruſt. This he alſo meaſured, and found it to be half of Veſpaſian's Congius (4). But weights are eaſily counterfeited; and when the remains of antiquity were ſo eagerly ſought after, that artiſts found it worth their while to counterfeit the ancient coins, others might counterfeit the weights.

The Roman Congius contained ten Pounds weight of wine (5). Veſpaſian's ſtandard is of braſs; Pætus, Villalpandus, and Greaves, have given drawings of it; and Gruter tells us, the inſcription was in letters of ſilver.

Pætus filled this veſſel to the narrow part of the neck with rain water, and weighed it with a ſteelyard. But this inſtrument is liable to great errors; therefore his weight, which wants 5½ modern Roman ounces of what Villalpandus found it, is of ſmall authority.

Villalpandus filled it to the ſame height with ſpring water, and found it to contain juſt ten modern Roman pounds, which are equal to 52560 Troy grains.

Auzout, filling it likewiſe to the ſame height with ſpring water, weighed its contents twice; and the near agreement of its capacity deduced from his weights, with Greaves's meaſure, by Millet (6), is a proof of their being very near the truth.

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(3) Gruter's Inſcriptions, p. ccxxiii.

(4) Greaves, p. 92. in a note.

(5) Feſtus de verb. ſignif. v. PUBLICA PONDERA.

Auzout's greater weight was 63024 Paris grains, equal to $51699\frac{3}{8}$ Troy; his leſſer, 62760 Paris grains, equal to $51482\frac{4}{5}$ Troy (7). It is not ſaid, at what time of the year either of theſe weights was taken; but the heat in ſummer, and the cold in winter, might have made a much greater difference between them.

The mean between both is $51591\frac{1}{10}$ Troy grains, which, divided by 10, give $5159\frac{1}{10}$ ſuch grains for the weight of the ancient Roman Pound.

Fabretti inſiſts, that this veſſel ought to have been filled up to the brim (8); but the part above the neck ſeems to have been deſigned, either to prevent the liquor from ſpilling when poured out, or for a ſecurity againſt the diminution of the ſtandard, which ſuch a finiſhing rendered impracticable.

Several objections have been made to this Pound derived from the Congius, of which the following are the moſt material.

Firſt, whereas the ſide of the Quadrantal containing 8 Congii, ſhould be equal to the Roman Foot; the ſide of a cube, containing 8 times this veſſel, exceeds the moſt authentic meaſures of that foot now remaining. But, as this relation of the two ſtandards to each other was of an ancient date, when all workmanſhip was probably very rude and inaccurate at Rome, we cannot wonder at ſuch a diſagreement; eſpecially as both the ſhape of this veſſel and the inſcription ſhew it was not adjuſted by the foot meaſure, but by weight.

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(6) See Philoſoph. Tranſ. Vol LI. p. 790.

(7) Divers ouvrages de Mathematique & de Phyſique par Meſſ. de l'Academie Royale, Paris, 1693, in folio. p. 366. 371.

(8) Fabretti Inſcript. p. 527.

Secondly, the ſame bulk of any liquor being found to weigh more in winter than in ſummer, we cannot determine the preciſe weight of the Roman Pound from the contents of this veſſel, unleſs we knew the ſeaſon of the year in which it was originally adjuſted.

Thirdly, Villalpandus ſeems to have made his experiment carefully (9); but his weight exceeds Auzout's leſſer weight by above 1000 Troy grains; though both uſed ſpring water. Now if two curious perſons, who endeavoured to diſcover the exact weight of the antient Roman Pound, could differ ſo much in weighing the contents of the ſame veſſel, can it ſeem improbable, that the Roman officer, to whoſe department the adjuſting this ſtandard might happen to belong, ſhould differ as much from its juſt weight? But if he happened to be a perſon of accuracy, he would take care, that the ſtandard of a meaſure of capacity ſhould not fall ſhort of its ancient dimenſions, which is extremely unpopular; and, though he might endeavour to be exact, he would rather chuſe to err in exceſs than defect. Therefore, this veſſel is more likely to give too great a Roman Pound, than too ſmall a one.

Fourthly, this veſſel was by law to contain ten Pounds weight of wine; which being lighter than water, the weights above-mentioned muſt be too great. But probably the Romans of that unphiloſophical age when this ſtandard was firſt eſtabliſhed were ignorant of this difference; and it might not be generally known, or not attended to, even in Veſpaſian's time; for Remnius Fannius, who lived long after, treating of the weights of various liquids, ſuppoſes the weight of wine to be equal to that of water,

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(9) See Greaves, p. 92.

Nam libræ, ut memorant, beſſim ſextarius addet,
Seu puros pendas latices, ſeu dona Lyæi.

And though he afterward tells us that ſome wines and ſome waters are heavier than others, he does not ſay that water is in general heavier than wine. And even at this day, when the ſpecific gravities of different liquors are ſo generally known, our books of Pharmacy call a wine pint of any liquor a pound. Therefore it is not improbable that this ſtandard was adjuſted by ſpring water in the reign of Veſpaſian.

But if it was really adjuſted by wine, the difference may be conſiderable; for, according to Eiſenſchmid's table of the ſpecific gravities of various liquids (1), that of pump-water is to Burgundy wine in the proportion of 371 to 355; and Auzout's mean weight of 5159 Troy grains diminiſhed in this proportion, gives but 4936½ ſuch grains for the antient Roman Pound.

All the above circumſtances conſidered, it ſeems more probable that this ſtandard ſhould give too great a Roman Pound, than too ſmall a one. But as nothing certain can be determined from it, we muſt have recourſe to the coins, eſpecially the gold, which though not ſo correctly ſized as the Greek Philippics, are much more ſo than the ſilver Denarii.

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(1) Eiſenſchmid, p. 174, 175.

Pliny tells us, that when the Romans firſt coined gold, they made the Scruple paſs for 20 Seſterces.

In the tables VI, VII. and X. of the Pembroke collection, we find nine pieces, weighing 17 grains, 26½, 33½, 51½, 53, 105, 107 twice, 107½.

That this was the ſcrupular coin mentioned by Pliny appears from the numeral letters XX for 20 Seſterces, on the ſmalleſt, and XXX on that of 33½ grains, which ſhould be its double; and all the reſt are multiples of ſomewhat between 17 and 18 grains, except the ſecond, which is a Scruple and half. What the mark ↓ X on that of 51½ grains denotes, I cannot tell. Savot, and Hardouin (2) call this figure ↓ a V, and ſay VX ſtood for 15; but though the Greeks often placed their numerals from right to left, I cannot find that the Romans ever did.

Theſe nine pieces ſhould contain 34½ Roman ſcruples: Their weight amounts to 608 Troy grains, which, divided by 34½, give $17\frac{43}{69}$ for the Scruple; whence the Roman Pound ſhould weigh $5075\frac{11}{23}$.

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(2) Savot, P. III. c. 7. Hardouin's note on Pliny. This piece is 3 Roman Scruples, which valued at 60 Seſterces of 2½ *Aſſes* to the Seſterce, was worth 150 *Aſſes*, or 9 ſilver Denarii and 6 *Aſſes*, wanting but 2 *Aſſes* of 9½ Denarii. Now in Ptolomy's geographical tables, where the degree is divided *unciatim*, after the Roman manner; this character ↓ ſtands for one half; therefore being placed before the X (as on the coin) it might denote 9½, as I before the X ſtands for 9. But Mr. Duane hath a gold coin with the ſame mark, and of the ſame impreſſion as this, which weighs but 45½ grains, though it ſeems to be perfect.

Why sh.d XX in one Coin, mentioned by Pliny, stand for so many Sesterces, and XV on the other, for so many Denarii? ~~for~~ [illegible] But what do these Coins prove supposing them genuine? Nothing more, than is allowed on all hands, that a Scruple of gold then passed for 20 Sesterces. But nothing in favour of the present numerals in Pliny: ~~scrupulum~~ ita ut scrupulum ~~[illegible]~~ valeret sestertios vicenis, quod effecit ratione sestertiorum qui tunc erant, sestertios DCCCC. Which sh.d undoubtedly be Sestertios 2400. Proofs they: Pliny says a Scruple of gold passed for 20 Sesterces. 2. It is well known, that the number of Scruples in the Roman Pound was always 288. Hence it follows, that a pound of gold, or 288 Scruples, were then current for for 20 times as many Sesterces, i.e. for 5760. So far is clear: next how many Sesterces were in a p.d of Silver? If there were 84 Denarii in the pound, as there certainly were till after the Consular times, there must be 4 times as many Sesterces, or 336. Let us now take the exchange between gold and silver, as it was then in Greece, and soon afterwards at Rome, w.ch was ten to one: ten times 336 Sesterces are 3360. Deduct this sum from 5760, the number which a pound of gold then passed for at Rome, the remainder is 2400. which is what y.e republic ~~gained~~ made in circulating their first gold coins. Clarke, p. 385.

But theſe pieces are too ſmall, and too few in number, to determine this point. Mr. Duane hath that of one Scruple, in fine preſervation, weighing almoſt 17½ grains. Mr. de la Nauze hath given the weight of the piece of 3 ſcruples with the mark ↓X in the French king's cabinet, which he ſays is exactly 64 Paris grains (3), equal to 52½ Troy, and gives 17½ grains for the Scruple.

This ſcrupular ſtandard ſeems to have continued till Sulla introduced one which Pliny hath not mentioned, on account, perhaps, of its ſhort duration. It was probably occaſioned by the riſe of the value of gold; for when the ſcrupular ſtandard was firſt eſtabliſhed, gold was worth but about ten times its weight in ſilver, as I ſhall ſhew hereafter; but in Sulla's time it was much dearer.

Cicero plainly alludes to this alteration in the coin, when, ſpeaking of his kinſman Marius Gratidianus, he ſays, *At that time the money was in ſuch a fluctuating ſtate that no man knew what he had* (4): and both he and Pliny relate, that the law Gratidianus made in Sulla's abſence from Rome, for the regulation of the coin, was ſo popular, that ſtatues were erected to him in every ſtreet, and incenſe burnt before them (5). The intent of this law ſeems to have been, to reſtore the ancient ſtandard in oppoſition to Sulla; for it ſo provoked him, that, on his return to Rome, he cauſed all the ſtatues to be thrown down (6), and Gratidianus

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(3) Memoires de l'Academie des Inſcriptions, Vol. XXX. p. 359

(4) Cicero de Officiis, L. III. § 20.

(5) Cicero, ibid. Pliny, Nat. Hiſt. L. XXXIII. c. 9.

(6) Pliny, L. XXXIV. c. 6.

anus to be cruelly butchered by the hand of Catiline (7).

Three coins in the Pembroke collection bear the name of Sulla, and weigh 166, 167, and 168 grains (8). Bouteroue mentions one of 204 Paris grains (9), equal to 167$\frac{1}{3}$ Troy. If thirty of theſe were coined out of the Roman Pound, the heavieſt of the four pieces gives a Pound of 5040 grains.

The ſtandard of forty in the pound, mentioned by Pliny, ſeems to have ſucceeded to this of Sulla, and continued to the eſtabliſhment of the monarchy under Auguſtus; for Pliny ſays, *Principes imminuere pondus*; and the two heavieſt pieces I can find of this ſtandard, are, one of Pompey, in whoſe time it ſeems to have been introduced, the other of Antony and Octavius, ſtruck after the expiration of the Triumvirate, which differ but the tenth part of a grain in weight. They are both in the Britiſh Muſeum, in fine preſervation. The former is like coin 4 Tab. XI. of the Pembroke collection; the latter like coin 11. Tab. XII. But ſuch as bear the name Auguſtus, which he aſſumed with the monarchy, are lighter than thoſe of the Triumvirate.

Pompey's coin weighs 128$\frac{1}{2}$ Troy grains, the other 128$\frac{2}{5}$. Mr. Duane hath both theſe coins in fine preſervation, the former weighing 126$\frac{1}{2}$ grains, the latter 127. Thoſe in the Pembroke Collection weigh 125 grains each.

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(7) Seneca de Ira, L. III. c. 18.

(8) Tab. VIII.

(9) Recherches curieuſes des monnoyes de France. Paris, 1666. in folio.

There are beſides, in the Britiſh Muſeum, two of 125 grains, like c. 2, and 4. in Tab. IX. of the Pembroke collection; one of $124\frac{1}{3}$ like coin 3. all very little worn; and a fourth of $124\frac{3}{5}$ grains, like c. 4. Tab. VII. which ſeems to be perfect. Dr. Hunter hath two perfect gold coins, one like c. 3. Tab. VIII. weighing $125\frac{3}{4}$ grains; the other like c. 2. Tab. IX. which weighs $125\frac{1}{2}$.

Theſe ten coins give a mean Aureus of $126\frac{1}{17}$ grains.

The Pembroke collection contains forty Aurei, from Pompey to the end of the Commonwealth. One of them weighs 127 grains; two $126\frac{1}{2}$; ſix 126; and the reſt from $125\frac{1}{2}$ to 123; except two of 121, which, being probably ſomewhat worn, or otherwiſe diminiſhed, may ſafely be rejected. The remaining 38 added to the ten above-mentioned, give a mean Aureus of $125\frac{5}{48}$ grains.

But conſidering that thirteen of the forty-eight weigh from $128\frac{1}{2}$ to 126 grains, and that many of the reſt are probably ſomewhat worn, we may fairly take 126 grains for the ſtandard weight of this coin; and the number of pieces under 125 grains, that are vouched for perfect, will not allow it to be greater.

Bouterone mentions two perfect Aurei of Julius Cæſar, each weighing 152 Paris grains, equal to $124\frac{}{10}$ Troy. And Greaves in his firſt Table hath marked three of Julius for perfect, which weigh $122\frac{1}{4}$, $123\frac{7}{12}$, and $124\frac{1}{4}$ grains.

If the Aureus of forty in the Pound weighed 126 Troy grains, the Roman Pound muſt weigh 5040.

The weight of this coin was gradually diminiſhed by the Emperors, till in Pliny's time forty-five were ſtruck out of the Pound. He died in the reign of Titus; and the mean Aureus of Greaves's table from Nero to that Prince, incluſive, is under 112 grains. That of the Pembroke Collection for the ſame period amounts to 113; but Nero's coins (contrary to Hardouin's reading of Pliny's text) appear to have been heavier than thoſe of Veſpaſian or Titus.

Snellius, in his book *De re numaria*, hath given the weights of eleven Aurei, from Nero to Commodus, which he ſays were all as perfect as when they came from the mint. The lighteſt weighed 149 Dutch grains, the heavieſt 153; which anſwer to $110\frac{1}{2}$ and $113\frac{1}{2}$ Troy. The mean taken from all the eleven, is almoſt 112 Troy grains.

Bouteroue found the Aureus from Nero to Septimius Severus, to weigh from 133 Paris grains to 138; that is, from $109\frac{1}{10}$ to $113\frac{1}{5}$ Troy. The mean of theſe two weights is $111\frac{3}{20}$ grains.

This ſtandard continued beyond the reign of Septimius Severus; and the Pembroke coins from Nero to that time, give a mean Aureus of almoſt 112 grains. But we cannot ſuppoſe all of them to be perfect. Greaves's tables make it $113\frac{2}{5}$ for the ſame period; but four of his pieces of Hadrian and the Antonines weigh from $117\frac{3}{4}$ to 121 grains; which is an uncommon weight for that age, and might poſſibly proceed from an alteration of the ſtandard, which did not continue long. Excluding theſe four, the reſt give a mean Aureus of $112\frac{1}{5}$ grains.

Eiſenſchmid weighed a great number of ſuch as ſeemed perfect to the naked eye, and found the beſt of them to exceed 136 Paris grains, or $111\frac{5}{9}$ Troy. But, upon examining them with a glaſs, they all appeared ſomehow damaged; which, ſays he, in ſo heavy a metal, might amount to the loſs of a grain or two (1). But the loſs of leſs than a grain is very diſcernible, without the help of a glaſs.

Upon the whole, if the ſtandard weight of the imperial Aureus of forty-five in the Pound, did not exceed 112 grains, the Roman Pound will weigh 5040 Troy grains, as we found it from the conſular Aureus.

Alexander Severus coined pieces of one half and one third of the Aureus, called Semiſſes, and Tremiſſes (2); whence the Aureus came to be called Solidus, as being their integer.

Soon after the reign of this prince, the coinage became very irregular, till Conſtantine entirely new modeled it, by coining 72 Solidi of four Scruples, out of the Pound of gold (3), and for the Denarius ſubſtituting the Miliarenſis, of which I ſhall give ſome account hereafter.

Greaves's ſecond table exhibits twenty-nine of theſe Solidi from Conſtantine to Heraclius, weighing from 67½ grains to 70¾. The mean from the twenty-nine pieces is 69 grains, which, multiplied by 72, gives but 4968 grains for the weight of the Roman

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(1) Eiſenſchmid, p. 34.

(2) Lampridius, in Alex. Severo.

(3) Siquis ſolidos appendere voluerit, auri cocti VI ſolidos quaternorum ſcrupulorum, noſtris vultibus figuratos, adpendat pro ſingulis unciis, XII pro duabus: eadem ratio ſervanda & ſi materiam quis inferat, ut ſolidos dediſſe videatur. Cod. Theod. de Ponderatoribus, § 1. Again, Illud autem cautionis adjicimus, ut quotieſcunque certa ſumma ſolidorum pro tituli quantitate debetur, & auri maſſa tranſmittitur, in LXXII ſolidos libra feratur accepta. Cod. Juſtin. L. X. Tit. 70. de Suſceptoribus, § 5.

Pound. But if the ſtandard weight of this coin amounted to 70 grains, the Pound will weigh 5040, agreeable to what we found it from the Aurei.

The Pembroke Collection contains 57 of theſe pieces from Conſtantine to Juſtinian. Five of them amount to 70 grains, and 29 to 69; the reſt are lighter, even to 64 grains. But we do not know what preſervation they are in. And unleſs the ſtandard weight of this coin amounted to 70 Troy grains, Conſtantine's Pound muſt have been ſomewhat deficient of the ancient Standard.

Having thus given as compleat an account of the Roman gold, as I have been able to collect from authors of credit, and my own obſervation, I ſhall proceed to examine the evidence we have of the weight of their ſilver money.

The Conſular ſilver is ſo unequal, that the Romans muſt have been very negligent in ſizing their pieces. Villalpandus tells us, that weighing many Denarii of the ſame form, inſcription, and apparent magnitude, and ſo like to each other, that they ſeem to have been ſtruck, not only in the ſame age, but even on the ſame day, he found them to differ in weight, 5, 9, or 10 grains from each other (4).

There is a piece in the Pembroke Collection, Coin 2. P. 3. Tab. 18, with the head of Roma, and X, the mark of the Denarius, on one ſide, on the other

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(4) Cum plures Denarios appenderemus ejuſdem formæ, inſcriptionis, & penè magnitudinis, atque ita ſimiles, ut non ſolum eodem tempore, ſed eodem prorſus die, percuſſos fuiſſe conjiceres, tamen eos deprehendimus quinis, novenis, aut denis granis pondere a ſe invicem diſtare. Villalp. De apparatu urbis & templi, p. 357. Ten Roman grains are equal to about 7$\frac{3}{4}$ Troy.

Caſtor and Pollux, with ROMA in the exergue, which weighs 81 grains. Another with the like impreſs on each ſide, and V the mark of the Quinarius behind the head, which weighs 33 grains. A third in the ſame page hath the mark XVI behind the head of Roma, a biga on the reverſe, with ROMA in the exergue, which weighs but 54 grains. As theſe pieces ſeem to be exhibited chiefly on account of their uncommon weight, we muſt ſuppoſe the lighteſt to be perfect.

In the Britiſh Muſeum is a coin like the tenth in P. 3. Tab. 2. of the Pembroke Collection, which weighs above 73 grains. Another like the ſecond in P. 3. Tab. 18, which weighs 66½ grains; and a third, which ſeems perfect in all reſpects, with the head of Roma and X on one ſide, on the other a Quadriga with the inſcription CN.GE, which weighs but 55 grains.

It is difficult to account for theſe differences in the weight of the ſame coin, eſpecially as Pliny ſeems to have been ignorant of ſuch inequalities; for he tells us of an Eaſtern King, that wonderfully admired the juſtice of the Romans in coining all their Denarii of the ſame weight, though the impreſſes ſhewed them to be the money of different Emperors (5). Perhaps the King only admired the invention of coining, which was not known in his country; but Pliny, who tells the ſtory, certainly ſuppoſed all the Denarii were of equal weight.

Perhaps the heavy pieces of 73 and 81 grains were ſtruck at the mint for private perſons, to give away in preſents on Birth-days, and New-years, as was the cuſtom at Rome; and ſome of them may be modern forgeries: but the light pieces of 54 and 55 grains, muſt have been owing to the negligence or roguery of the coiners; though ſome of theſe too may be counterfeits.

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(5) Pliny, Nat. Hiſt. L. VI. c. 22.

The following Table exhibits the weights of forty-ſix of the faireſt Denarii in the Britiſh Muſeum. Such of them as are marked with two dots, are a little worn, though very little. The Bigati and Quadrigati are diſtinguiſhed by the letters B. and Q.

Troy grains

66,5 :
66,1
64,15 :
63,33
63,15 :
63,07 :
63,05
62,7
62,43 : Q
62,27
61,95
61,93 :
61,8 :
61,8 B
61,73 :
61,73 :
61,55 : Q
61,52 Q
61,5 :
61,5
61,35
61,33
61,2

61,15
61,12 :
61,12
61,1 : Q
61,07 : B
60,85 :
60,75
60,5 : B
60,33 : B
60,3 : Q
60,2 B
60,05
59,95 :
59,15 : B
58,92 : Q
58,85 :
58,67 : Q
58,2 Q
58,15
57,37 :
56,87 :
56,55 Q
55,0 Q

46) 2803,86 Sum total.
60,95 Mean Denarius.

The mean weight of the Denarius from all theſe pieces is 60,95 Troy grains; therefore, had all of them been perfect, it might have exceeded 61 grains. But the mean from the twenty-one that are ſo, amounts but to 60,92. Either of them comes very near to what Eiſenſchmid found it by the like method; though he rejected ſome pieces for no other reaſon but becauſe he thought them too light.

But a mean from pieces ſo unequally ſized is not to be relied on. And it may be queſtioned whether thoſe of above 63 grains ever paſſed as common coin. Greaves, who had examined many hundred Denarii Conſulares, ſays the beſt amounted to 62 grains; but had he met with any of 63, or even of 62½, it cannot be doubted that he would have mentioned them in ſupport of his Denarius of 62$\frac{4}{7}$ grains from the Congius. Therefore the pieces of 63 grains and upward muſt be very uncommon, whereas they make above a ſeventh part of the number in this table.

Hence I conclude, that the mean derived from this table is of very ſmall authority.

But if we take 5040 Troy grains for the weight of the Roman Pound, as determined from the Gold coins; the ſcruple will weigh 17½ grains; the Conſular Aureus, 126; the Imperial Aureus, 112; and the Solidus, 70: all which are probable weights of the ſeveral Coins; and the Conſular Denarius of 84 in the Pound will weigh juſt 60 Troy grains.

And this muſt be very near its true ſtandard weight; for were we to add only half a grain to it, the Conſular Aureus would exceed 127 grains, which is certainly too great a weight for that coin.

Though Pliny gives no particular account of any alteration in the weight of the Denarius, it was undoubtedly diminiſhed by the Emperors as well as the Aureus, though by what degrees is uncertain; for Galen tells us, that the writers on weights and meaſures differed in the number of Drachms [*Denarii*] they aſſigned to the Ounce; moſt of them making it to contain 7½, ſome but 7, and others 8 (6). The later writers make it contain 8 Denarii, of 3 ſcruples each (7).

Greaves "found by examining many Imperial "Denarii, that from Auguſtus's time to Veſpaſian "they continually almoſt decreaſed, till, from being "the ſeventh part of the Roman Ounce, they came "now to be the eighth part: and therefore 96 were "coined out of the Roman Libra, whereas before, "under the Conſuls, 84. From Veſpaſian to Alex. "Severus, as far as he had obſerved, the Silver con-"tinued at a kind of ſtay in reſpect of weight, ex-"cepting only ſuch coins as upon ſome extraordi-"nary occaſion, both then, and in the firſt Emperors "time, were ſtamped, either in honour of the Prince, "or of the Empreſs and Auguſta familia, or elſe in "memory of ſome eminent action. Theſe laſt moſt "uſually were equal to the Denarii Conſulares, and "many of them had theſe characters EX. S. C, or "elſe S. P. Q. R. Under Severus and Gordianus, "the Denarii began to recover their primitive weight, "but moſt commonly with a notable abaſement, "and mixture of allay (8)." Eiſenſchmid hath given the like account of the Imperial Denarius, and ſays he found its weight from Nero to Sept. Severus, to be to the Conſular Denarius in the proportion of 7 to 8 (9).

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(6) Galen, de med. comp. ſec. genera, L. III. c. 3.
(7) Rhemnius Fannius, Cleopatra, Dioſcorides, &c.
(8) Greaves, p. 113.

Having determined the weight of the ancient Roman Pound from the gold coins, to be 5040 Troy grains, it ſeems requiſite to ſay ſomething concerning the heavy weights exhibited by Gruter and Fabretti, which are irreconcileable to every other evidence.

Thoſe with inſcriptions are not older than the reign of Auguſtus; but neither his coins, nor thoſe of his ſucceſſors, will by any means anſwer to ſuch ſtandards.

Fabretti's mean pound of 5500 Troy grains, exceeds Auzout's mean Pound from the Congius by above three fourths of the antient Roman Ounce, though that veſſel is greater than can be derived from the greateſt probable meaſure of the antient Roman foot.

The weight of ſpring-water contained in the cube of half that foot (which was the legal meaſure of the Congius) is thus determined.

According to Eiſenſchmid's Table of ſpecific gravities (1), a cubic Paris inch of ſpring-water ſhould weigh 374 Paris grains in winter, when liquors are heavieſt. Therefore the cube of half the Paris foot (or 216 cubic Paris inches) muſt weigh 80784 ſuch grains.

The greateſt probable meaſure of the antient Roman foot, does not exceed 974 ſuch parts as the Paris foot contains $1065\frac{2}{3}$ (2).

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(9) Eiſenſchmid, p. 33.

(1) Eiſenſchmid, p. 175.

(2) See the Diſcourſe on the Roman Foot, Phil. Tranſ. Vol. LI.

And as the cube of the Paris foot, is to the cube of the Roman foot, ſo are 80784 Paris grains, to 61725½ ſuch grains, the weight of the ſpring-water contained in the cube of half the Roman foot.

But 61725½ Paris grains, are equal to 50634 Troy; therefore the Roman Pound, according to this calculation, ſhould weigh 5063⅖ Troy grains, exceeding that derived from the coins, but by 23⅖ ſuch grains.

If, on the other hand, we take Fabretti's Pound of 5500 Troy grains (equal to 6704¾ Paris) and reckon the weight of a cubic Paris inch of ſpring-water 374 Paris grains (as before), a Congius of ten ſuch Pounds will require a Roman foot of 1001 ſuch parts as the Paris foot contains 1065⅖; which exceeds any probable meaſure of that foot.

Thus theſe heavy weights neither agree with the Roman money nor with the Congius; which is a circumſtance not eaſily to be accounted for, as the authorities for the larger Pound are indiſputable, and we do not know that the Romans uſed two weights like our Troy and Averdepoids.

The Denarius continued to be the current ſilver money of the Empire, till Conſtantine ſubſtituted the
o mean, Miliarenſis in its ſtead.

The price of gold had been increaſing a conſiderable time before his reign, which made a new regulation of the money neceſſary. For this purpoſe, Conſtantine divided the Pound of gold into ſeventy-two Solidi (3), which was a more commodious number than either 40 or 45, as it divided the Ounce and half Ounce without a fraction. He likewiſe altered the weight of the ſilver coin, and fixed the price of the Pound of gold at 1000 pieces of his new ſilver, which were thence called Miliarenſes (4). This he ſeems to have done in imitation of the ancient coinage; for when the Aureus of forty in the Pound paſſed for 25 Denarii, the Pound of gold paſſed for 1000.

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(3) See the Theod. and Juſtinian Codes, quoted in p. 45.

But it was attended with this inconvenience, that his Solidus could not be exchanged for its true value in ſilver; for 1000 divided by 72 is 13$\frac{8}{9}$; but it paſſed for 14 (5), which was more than it was worth, and made two prices of gold at the ſame time; one the legal price of 1000 Miliarenſes for the Pound; the other, the current price, of 14 for the Solidus, which muſt have occaſioned diſputes in the payment of ſmall ſums.

To remedy this inconvenience, it was thought proper to alter the weight of the ſilver money, and having fixt the price of the Pound of ſilver at five Solidi (6), to coin 60 pieces out of it (7); which retained the name Miliarenſes, though the Pound of Gold was worth but 864.

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(4) Μιλιαρήσιον, τὸ χιλιοστὸν τῆς τοῦ χρυσοῦ λίτρας· μίλη γὰρ οἱ Ῥωμαῖοι τὰ χίλια καλοῦσι, καὶ οὕτω κατεκερμάτωσαν τὸ πόσον τῆς λίτρας, ἵνα δι' αὐτοῦ σώζηται τὰ χίλια μιλιαρήσια, ὥστε κατὰ νόμισμα λαγχάνειν μιλιαρήσια ιδʹ. Gloſſæ nomicæ, quoted by Gronovius, L. IV. c. 16. de pecunia vetere.

(5) See the preceeding note.

(6) Jubemus ut pro argenti ſumma quam quis theſauris fuerit illaturus, inferendi auri accipiat facultatem, ita ut pro ſingulis libris argenti, quinos Solidos inferat. Cod. Theod. De argenti pretio, & Cod. Juſtin. L. X. Tit. 76.

(7) Cum publica celebrantur officia, ſit ſportulis nummus argenteus,—nec majorum argenteum nummum fas ſit expendere,

A ſcholiaſt on the Baſilics tells us, that " One " Siliqua [*of gold*] is worth 12 Folles [*of copper*], or " half a Miliarenſis: therefore 12 Siliquas are half " a Solidus, for the whole Solidus is worth 12 Mi- " liarenſes, or 24 Siliquas (8)." The Roman Pound contained 1728 Siliquas (9), therefore there were 72 of theſe Solidi in the Pound; and each of them being worth 12 Miliarenſes, the Pound of ſilver, which was valued at 5 Solidi, muſt have contained 60 Miliarenſes.

How many Miliarenſes Conſtantine coined out of the Pound of ſilver is no where ſaid; but if the price of Gold was nearly the ſame in his reign, as when 5 Solidi were worth a Pound of ſilver, the Pound muſt have been worth $14\frac{2}{5}$ Pounds of ſilver; and 1000 divided by $14\frac{2}{5}$, gives $69\frac{4}{9}$ for the number of Miliarenſes coined out of the Pound. Therefore it is probable Conſtantine's number was either 69 or 70. If the former, each piece ſhould weigh $73\frac{8}{23}$ Troy grains; if the latter, $72\frac{3}{10}$.

Eiſenſchmid found the larger ſilver of Conſtantine to come up to 90 Paris grains, or $73\frac{83}{100}$ Troy; but the ſmaller (which ſhould be its half) ſeldom amounted to 40 Paris grains, or $32\frac{4}{5}$ Troy; which

leaves

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quam qui formari ſolet, cum argenti libra una in argenteas ſexaginta dividitur. Cod. Theod. De expenſis ludorum.

(8) Χρὴ γινώσκειν ὅτι τὸ ἓν κεράτιον φόλλεις εἰσὶ ιϐʹ, ἤτοι μιλιαρησίου τὸ ἥμισυ· τὰ ἓν ιϐʹ κεράτιά ἐϛι νομίσματος ἥμισυ· τὸ δὲ ἀκέραιον νόμισμα ἔχει μιλιαρήσια ιϐʹ, ἤτοι κεράτια κδʹ. Schol. in L. XXIII. Βασιλικῶν, apud Gronov. L. IV. c. 16. De pecunia vetere.

(9) See Rhemnius Fannius, and others.

leaves it uncertain whether 69 or 70 of theſe Miliarenſes were coined out of the Pound. If 69, the proportion of gold to ſilver was almoſt $14\frac{1}{2}$ to 1; if 70, $14\frac{2}{7}$ to 1.

In the Gloſſæ nomicæ, quoted by Gronovius and others, we have an attempt to ſettle the exchange between the two Miliarenſes and the Solidus. The Gloſſographer, giving an account of the different ſums called Folles, ſays, "There is likewiſe another "Follis, conſiſting of the ſmaller ſilver which was "paid to the ſoldiers, and thence called Miliarenſes, "each of which is worth $1\frac{3}{4}$ Siliquas [*of gold*], and "the Follis contains 125, which make 218 Siliquas "and 9 nummi; or 109 of the Miliarenſes now "current and 9 nummi; which are worth 9 Solidi, "1 Miliarenſis, and 9 nummi, and the Purſe of 125 "pieces of this leſſer ſilver, was called a Follis (1.)"

This Gloſs appears to come from a different hand from that before quoted, by the abſurd etymology here given of the word Μιλιαρήσιον; and the author did not underſtand his ſubject. For the Miliarenſis of 60 in the Pound, was undoubtedly worth 2 Siliquas of gold, and if Conſtantine's was worth $1\frac{3}{4}$ when this Gloſſographer wrote, the two coins muſt have been in the proportion of 8 to 7, and the exchange

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(1) Ἐστὶ δὲ καὶ ἕτερος φόλλις συναγόμενος ἐξ ἀργυρίων λεπτῶν, τῶν τοῖς στρατιώταις διδομένων, καὶ διὰ τοῦτο μιλιαρησίων καλουμένων· ἔχει δὲ ἕκαστον τῶν τοιούτων λεπτῶν ἀργυρίων κεράτιον ἓν, ἥμισυ, τέταρτον· ὁ δὲ φόλλις, ἀργύρια τοιαῦτα ρκέ. ἃ ποιοῦσι κεράτια σιή, καὶ νούμμους θ'. ἤτοι, πρὸς τὸ νῦν κρατοῦν, μιλιαρήσια ρθ'. καὶ νούμμους θ'. γινόμενα ἐν χαράγμασι νομίσματα θ', μιλιαρήσιον ἓν, καὶ νούμμους θ'. τὰ τοίνυν ρκέ ἀργύρια συνήγετο εἰς ἀπόδεσμον ἕνα, καὶ οὗτος ἐκαλεῖτο φόλλις. Gloſſæ nomicæ apud Gronov. L. IV. c. 16.

made in ſmaller numbers without fractions; for 7 Solidi being worth 84 of the new Miliarenſes, would exchange for 96 of Conſtantine's.

But this Follis of 125 Miliarenſes, ſeems to have been intended for a more correct adjuſtment of Conſtantine's ſilver to his gold than 14 Miliarenſes for the Solidus; for it was the true value of 9 Solidi, which, at the rate of 14 for the Solidus, ſhould have exchanged for 126, which was one more than they were worth. And nine was the leaſt number of Solidi that could be exchanged for their true value in Conſtantine's ſilver; which this gloſſographer ſeems not to have known. For the Roman Pound containing 1728 Siliquas, Conſtantine's Miliarenſis was worth but the thouſandth part of them, or $1\frac{728}{1000}$, which multiplied by 125 make juſt 216 Siliquas without a fraction, which were equal to 9 Solidi. Or, ſuppoſing the proportion of Gold to ſilver the ſame when the new Miliarenſes were coined, as when the old ones were, 1000 of the latter and 864 of the former, being each worth a Pound of gold; divide both numbers by 8, and we ſhall have 125 of the old, worth 108 of the new, which paſſed for 9 Solidi.

Having mentioned the Follis, I ſhall endeavour to explain what it was. The word is Latin, and it anciently ſignified a little bag, or purſe; whence it afterward came to be uſed for a ſum of money, and very different ſums were called by that name. Thus, the Scholiaſt on the Baſilics mentions a Follis which was worth but the 24th part of the Miliarenſis; the Gloſſæ nomicæ, one of 125 Miliarenſes, and another of 250 Denarii (which was the ancient Seſtertium);

and three different ſums, of 8, 4, and 2 pound of gold, were each called a Follis (2).

The Gloſſographer laſt quoted makes 9 Nummi equal to ¾ of a Siliqua; for 1¾ multiplied by 125, is 218¾, which he calls 218 Siliquas, and 9 nummi. Therefore 12 nummi were equal to a Siliqua; but the ſcholiaſt on the Baſilics makes 12 Folles equal to a Siliqua; conſequently, this Nummus and the ſcholiaſts Follis are the ſame.

The Scholiaſt tells us, the Miliarenſis was equal to 24 Folles of copper, therefore the Ounce of ſilver containing 5 Miliarenſes of 60 in the pound, was worth 120 ſuch Folles.

The Gloſſographer, deſcribing a Follis of 250 Denarii, ſays, it was equal to 312 Pounds, 6 Ounces *of copper* (3). The Denarius of that age was the eighth part of an Ounce, therefore an Ounce of ſilver muſt have been worth 120 Ounces of copper.

But according to the Scholiaſt, the Ounce of ſilver was worth ſo many Folles; therefore the Scholiaſt's Follis was an Ounce of copper. And this Follis being equal to the Gloſſographer's Nummus, that Nummus was likewiſe an Ounce of copper.

By a Reſcript of Arcadius and Honorius in the Theodoſian Code, the treaſury was impowered to receive a Solidus for 25 Pounds of copper (4), which ſets the price of that metal at the 125th part of its weight in ſilver. But the ſame Reſcript in Juſtinian's Code (5) for XXV *libris æris*, hath XX *libris æris*. Both cannot be right, perhaps neither; and the true reading may be XXIV *libris æris*, agreeable to theſe commentators.

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(2) See the Gloſſæ nomicæ, quoted by Gronovius near the end of c. 16. of L. IV.

(3) Φόλλις ςαθμός ἐςι, λεγόμενος καὶ βαλάντιον· ἕλκει δὲ δηνάρια διακόσια πεντήκοντα, τουτ᾽ ἔςι λίτρας τιβʹ, καὶ οὐγγίας ἕξ, ὡς ἔχοντος ἑκάςου δηναρίου λίτραν ά καὶ οὐγγίας γʹ. Gloſſæ nomicæ, apud Gronov. L. IV. c. 16.

Eiſenſchmid found Conſtantine's copper money to weigh a quarter of a Roman Ounce (6); therefore the Scholiaſt's Follis, and the Gloſſographer's Nummus contained four of them, as the ancient Nummus contained four *Aſſes*; but whereas the Denarius formerly paſſed for four Nummi, it now paſſed for 15, and the writers of this age ſay it paſſed for 60 *Aſſes* (7).

§ 4. *Of the value of Gold in Greece and Rome.*

Herodotus reckons the value of gold to ſilver in the proportion of 13 to 1 (1). Plato, who wrote about fifty years after him, ſays it was 12 times the value of ſilver (2); and Xenophon, Plato's contemporary, relates, that Cyrus paid Silanus the Ambraciot 3000 Darics for the ten talents he had promiſed

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(4) Æris pretia quæ a provincialibus poſtulantur, ita excipi volumus, ut pro XXV. libris æris, Solidus a poſſeſſore reddatur. Cod. Theodoſ. de collatione æris.

(5) Cod. Juſtin. L. X. Tit. 29.

(6) Eiſenſchmid, p. 141.

(7) Hero, Epiphanius, &c.

(1) Herodotus, L. III. § 95.

(2) Plato in his Hipparchus.

him

900 Den
4 HS
3600

him (3); which being Babylonian talents, agrees with Plato's eſtimate, as I have ſhewn above.

After the conqueſt of Aſia by Alexander, the immenſe treaſures of the Kings of Perſia circulating in Aſia and Greece, reduced the price of gold to ten times its weight in ſilver, at which it ſeems to have continued two hundred years, or more.

The Romans did not coin gold till above a hundred years after the death of Alexander: and Pliny gives the following account of its firſt coinage. *Aureus nummus poſt annum* LXII *percuſſus eſt quam argenteus, ita ut ſcrupulum valeret Seſtertiis vicenis: quod** *effecit in libras, ratione Seſtertiorum qui tunc erant, Seſtertios* DCCCC (4). Now if the Scruple was valued at 20 Seſterces, the Pound, inſtead of being worth 900, muſt have been worth 5760 ſuch Seſterces: but if for *Seſtertios* DCCCC, we read *Denarios* DCCCC, the account will be clear and intelligible. The words *ratione Seſtertiorum qui tunc erant*, imply that the Seſterce of that age was different from the Seſterce of Pliny's time: but the quarter of the ſilver Denarius, or Nummus Seſtertius of 4 *Aſſes*, was the ſame at both times, and we know of no other Seſterce but the ancient one of 2½ *Aſſes*. Twenty ſuch Seſterces make 50 *Aſſes* for the value of the Scruple of gold; which multiplied by 288 (the number of Scruples in the Roman Pound) give 14400 *Aſſes* for the value of the Pound of Gold. And reckoning 16 *Aſſes* to the *ſilver* Denarius (which it paſſed for at the time of this coinage) 14400 *Aſſes*

*not worth but gained

12 times 8 Drachms or 96 make a Rom. pd. and 3 Scruples made one Drachm, in all 3 times 96
* ~~8×12×3 = 288~~ in all 288

[Me.] It is well known* that the number of Scruples in the Roman pound was always 288. Hence it follows, that a pound of gold, or 288 Scruples, were then current for 20 times as many Sesterces, i.e. for 5760. So far all is clear: the next point is, how many Sesterces were then in a pound of silver. If there were 84 Denarii in the pound, as there certainly were till after the Consular times, there must be four times as many Sesterces, or 336. Let us now take the exchange between gold and silver as it was then in Greece, and soon afterwards at Rome, which was ten to one: ten times 336 Sesterces are 3360: deduct this sum from 5760, the number of Sesterces in a pound of silver, the number which a pound of gold then passed for at Rome, and the number is 2400. X

Mr Clarke, p. 336. —

The Number therefore designed by Pliny was Sestertios MMCCCC, and should be so corrected

(3) Xenophon in his Expedition of Cyrus, L. I.
(4) Pliny Nat. Hiſt. L. XXXIII. c. 3.

Mr Raper is for ~~[illegible]~~ correcting Sestertios to Denarios, which makes in Sesterces (at 2½ to the Denarius) 2250. Whereas by Mr Clarke's emendation of the numerals, the gain in Sesterces was 2400; which is confirmed by a like emendation (of XII for XV) in Pliny Nat. Hist. II. 13. ~~The Romans always [illegible]~~
~~[illegible]~~

~~itself besides being agit~~
~~custom: See Tapp [illegible] &c.~~
Denarios must have been written at length, and could hardly be mistaken for fifty. It is
— But on the contrary do not all mistakes arise from the Numerals?
highly probable a D for II, the like to which is taken off three or four times in
a disc. of Vignoles, Masson Hist. Crit. vol. XI. p. 44, 45.

make juſt 900 ſuch Denarii; which is Pliny's number.

That the Romans kept their accounts in copper Seſterces of 2½ *Aſſes*, long after the ſilver Seſterce paſſed for 4, appears not only from this paſſage, but from what Pliny ſays of the pay of the Army, that notwithſtanding the *ſilver* Denarius paſſed for 16 *Aſſes*, it was paid to the ſoldier for 10: which implies that the Quæſtor's accounts were kept in copper money, as all the public accounts probably were. Cæſar is ſaid to have doubled the pay of the ſoldiers (5), and it appears from the account Tacitus gives of the mutiny of the legions in Pannonia (6), that at the acceſſion of Tiberius to the empire, their pay was but ten *Aſſes* a day; and they demanded a Denarius, not upon pretence that the legionary ſoldiers had ever received ſo much, but that ten *Aſſes* were not an equivalent for the dangers and hardſhips a ſoldier underwent. Hence 5 *Aſſes* appear to have been their pay before Cæſar raiſed it; but if this was their pay on the Quæſtor's book, they actually (according to Pliny) received a Quinarius of 8 *Aſſes*, and Cæſar only nominally doubled it; which is more probable than that their pay at the time he raiſed it, ſhould be under two-pence three-farthings Engliſh a day. Polybius tells us, that in his time the pay of a Roman foot ſoldier was two Oboles a day; that of a centurion twice as much; and that of a horſeman a Drachm (or Denarius) (7). This muſt be underſtood of what they received, not of their nominal pay on the Quæſtor's book. The foot ſoldier, therefore, was paid at the rate of $5\frac{1}{3}$ *Aſſes* a day, which, in a country where a traveller might have his lodging and all neceſſaries on the road for half an *As* (8), would be great pay, had not their cloathing, arms, and tents, been deducted out of it, as they were (9). But both the public and private riches of the Romans were increaſing very faſt when Polybius wrote, and the prices of all the neceſſaries of life muſt have increaſed in proportion, therefore it is probable that the ſoldier's pay was raiſed to 5 *Aſſes* on the Quæſtor's book, for which they received a Quinarius, before Cæſar augmented it.

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(5) Suetonius in Julio, c. 26.
(6) Taciti Annal. L. I. § 17.
(7) Polybius, L. VI. p. 484 of Caſaubon's edition.

If the Pound weight of gold was worth 900 Denarii, 84 of which were coined out of the Pound of ſilver, the value of gold to ſilver muſt have been in the proportion of 900 to 84, or as $10\frac{5}{7}$ to 1. And if this was the value of gold at Rome ſixty-two years after their firſt coinage of ſilver, it proves that no fewer than 84 Denarii were then coined out of the Pound. Now by an article in the treaty with the Etolians, about eighteen years after this firſt coinage of gold at Rome, that people were permitted to pay one third of their tribute in gold, at the rate of one Pound of gold for ten of ſilver (1). Therefore gold was then but ten times the value of ſilver in Greece; and it could not be much higher at Rome, where ſilver was eſteemed the more uſeful metal, as appears by the limitation of the ſum to be paid in gold, to one third of the whole; and Pliny obſerves, that the Romans always required the tribute they impoſed on conquered countries ſhould be paid in ſilver, not in gold (2); therefore it is not probable that gold ſhould bear a much higher price at Rome than elſewhere, as it would, according to this account of its firſt coinage, if fewer than 84 Denarii were coined out of the Pound of ſilver.

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(8) Polybius, L. II. p. 103.

(9) Polybius, L. VI. p. 484. Taciti Annal. L. I. § 17.

(1) Polybius, Excerpt. Legat. § 28. Livy L. XXXVIII.

There is another paſſage in Pliny relating to the value of gold, which requires correction. Speaking of the Byſſine thread, he ſays, *Quaternis denariis ſcripula ejus permutata quondam, ut auri, reperio* (3). When 96 Denarii were coined out of the Pound, each of them weighed 3 Scruples; therefore 4 Denarii weighed 12 Scruples, which was nearly the value of a Scruple of gold when Pliny wrote. But Pliny knew no ſuch Denarius; for he ſays, the lawful weight of that coin was the eighty-fourth part of the Pound; beſides, he ſpeaks here of former times. Therefore for *Quaternis*, we ſhould read *Ternis*; for 3 Denarii of 84 in the Pound weighed 10$\frac{2}{7}$ Scruples, which was nearly the ancient value of a Scruple of gold.

From a paſſage in Tacitus, compared with Suetonius, we learn that in Galba's time the Aureus paſſed for 25 Denarii; the former ſays ——*ut per ſpeciem convivii quoties Galba apud Othonem epularetur, cohorti excubias agenti viritim centum nummos divideret*; which the latter expreſſes thus, *quoties cœnâ principem exciperet, Aureos excubanti cohorti viritim dividebat* (4). But 100 Nummi were equal to 25 Denarii; therefore when 40 Aurei were coined out of the Pound of gold, and 84 Denarii out of the Pound of ſilver, the Pound of gold paſſing for 1000 Denarii, was worth $11\frac{19}{21}$ Pounds of ſilver.

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(2) Pliny, Nat. Hiſt. L. XXXIII. c. 3.

(3) L. XIX. c. 1.

(4) Taciti Hiſt. L. I. § 24. Suetonius in Othone, c. 4. See alſo Dio Caſſius, L. LV.

When the Aureus of 45 in the Pound paſſed for 25 Denarii of 96 in the Pound, the proportional value of gold to ſilver was as 375 to 32, or a little under $11\frac{3}{4}$ to 1.

Suetonius tells us, that Cæſar brought ſo great a quantity of gold from Gaul, that he ſold it throughout Italy and the Provinces for 3000 nummi the Pound (5). 3000 nummi make 750 Denarii; and 750 is to 84, as $8\frac{13}{14}$ to 1. This was its price as merchandize, when the market was overſtocked, and the ſeller in haſte to diſpoſe of his goods; but what effect it had on the coin, we do not know.

By the diminution of the Aureus for above half a century before the reign of Conſtantine (6), the price of gold appears to have been riſing, till it came to above 14 times its weight in ſilver; for five Solidi of 72 in the Pound, being valued at a Pound of ſilver (7), the proportion between the two metals was as $14\frac{2}{5}$ to 1.

§ V. *Of the value of the ancient Greek and Roman money.*

IT does not appear that either the ancient Greeks or Romans allayed their money, but coined the metals as pure as the refiners of thoſe times could make them: for though Pliny mentions two inſtances of the contrary at Rome (1), the example was not followed, till the later Emperors debaſed the coin: and his expreſſion, *miſcentur æra falſæ monetæ*, ſhews he thought the practice illegal.

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(5) Suetonius in Julio, c. 54.
(6) See the Pembroke Collection, from Tab. XX. to XXIV.
(7) See Cod. Juſtinian. L. X. Tit. 76. quoted above.

Though the ancients had not the art of refining ſilver, in ſo great perfection as it is now practiſed, yet, as they mixed no baſe metal with it, and eſteemed what they coined to be fine ſilver, I ſhall value it as ſuch.

Sixty-two Engliſh Shillings are coined out of 11 ounces 2 p. wt. Troy of fine ſilver, and 18 p. wt. allay. Therefore, the Troy grain of fine ſilver is worth $\frac{62}{111}$ths of a Farthing. Hence the Attic Drachm of 66½ grains will be found worth a little more than Ninepence farthing; the Obole, a little more than Three halfpence; and the Chalcus, about $\frac{7}{9}$ of a Farthing.

But, for the reduction of large ſums to Engliſh money, the following numbers are more exact.

	£.	s.	d.
The Attic Drachm	0.	0.	9,286
The Mina	3.	17.	4,6
The Talent	232.	3.	0.

Hence the Mina expreſſed in Pounds Sterling and decimals of a Pound will be £. 3,869; the Talent £. 232,15.

The Romans reckoned by *Aſſes* before they coined ſilver, after which they kept their accounts in Seſterces. The word Seſtertius is an adjective, and ſignifies two and a half of any ſubſtantive to which it refers. In money matters its ſubſtantive is either *As*, or pondus; and Seſtertius *As*, is two *Aſſes* and a half; Seſtertium pondus, two pondera and a half, or 250 Denarii (2).

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(1) Pliny Nat. Hiſt. L. XXXIII. c. 3. & c. 9.

When the Denarius paſſed for ten *Aſſes*, the Seſterce of 2½ *Aſſes* was a quarter of it; and the Romans continued to keep their accounts in theſe Seſterces long after the Denarius paſſed for ſixteen Aſſes; til, growing rich, they found it more convenient to reckon by quarters of the Denarius, which they called Nummi, and uſed the words Nummus and Seſtertius, indifferently as ſynonymous terms, and ſometimes both together, as Seſtertius nummus; in which caſe, the word Seſtertius, having loſt its original ſignification, was uſed as a ſubſtantive; for Seſtertius nummus was not two Nummi and a half, but a ſingle Nummus of four *Aſſes*.

They called any ſum under 2000 Seſterces ſo many Seſtertii, in the maſculine gender; 2000 Seſterces they called duo or bina Seſtertia, in the neuter; ſo many quarters making 500 Denarii, which was twice the Seſtertium; and they ſaid dena, vicena, &c. Seſtertia, till the ſum amounted to a thouſand Seſtertia, which was a million of Seſterces. But, to avoid ambiguity, they did not uſe the neuter Seſtertium in the ſingular number, when the whole ſum amounted to no more than 1000 Seſterces, or one Seſtertium.

They called a million of Seſterces Decies nummûm, or Decies Seſtertiûm, for Decies centena millia nummorum, or Seſtertiorum (in the maſculine gender) omitting centena millia, for the ſake of brevity: they likewiſe called the ſame ſum Decies Seſtertium (in the neuter gender), for Decies centies Seſtertium, omitting Centies for the reaſon above-mentioned; or ſimply Decies, omitting centena millia Seſtertiûm, or centies Seſtertium; and with the numeral adverbs, Decies, Vicies, Centies, Millies, and the like, either centena millia, or centies, was always underſtood.

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(2) See Gronovius, *De pecunia vetere*, L. I. c. 4.

These were their moſt uſual forms of expreſſion, though for Bina, Dena, Vicena Seſtertia, they frequently ſaid, Bina, Dena, Vicena millia nummûm (3); and Cicero, in the paſſage quoted in the margin, hath uſed Mille Seſtertia, for Decies Seſtertium. But Gronovius ſays, that expreſſion is not to be found elſewhere, and ſuppoſes it to be a falſe reading.

If the Conſular Denarius contained 60 Troy grains of fine ſilver, it was worth ſomewhat more than Eightpence farthing and a half Sterling; and the *As*, of ſixteen to the Denarius, a little more than a Halfpeny.

To reduce the ancient Seſterces of 2½ *Aſſes*, when the Denarius paſſed for 16, to pounds Sterling, multiply the given number by 5454, and cut off ſix figures on the right hand for decimals.

To reduce Nummi Seſtertii, or quarters of the Denarius, to pounds Sterling; if the given ſum be Conſular money, multiply by 8727, and cut off ſix figures on the right hand for decimals; but for Imperial money, diminiſh the ſaid product by one eighth of itſelf.

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(3) Suetonius in Julio, c. 38. Cicero in Verrem, L. I. § 14.

For example, Cicero ſays, Verres had received *Vicies, ducenta triginta quinqe millia, quadringentos decem & ſeptem nummos*, or 2.235.417 Seſterces: this being Conſular money, multiply by 8727, and cutting off ſix figures from the product, £. 19508,484159, or 19508 *l.* 9 *s.* 8 *d.* will be their value in Engliſh money.

Again, Suetonius relates, that when Veſpaſian came to the Empire, he found the treaſury ſo exhauſted, that he declared Quadringenties millies, or 40.000.000.000 nummi, were wanted to ſupport the Government (4). This was Imperial money, which, multiplied by 8727, and cutting off ſix figures
from the product, gives 349.080.000
One eighth of which, 43.635.000
being ſubtracted, leaves £. 305.445.000 Pounds Sterling.

But Budæus ſuppoſes, that for *Quadringenties millies*, we ſhould read *Quadragies millies*, which reduces it to £. 30.544.500, and is a much more probable ſum.

If the Miliarenſes of 60 in the pound were fine ſilver, and weighed 84 Troy grains, they were worth 46,918918 . . . Farthings and decimals, or almoſt 11 pence 3 farthings Sterling; and the Solidus paſſing for 12 of them, was worth a little more than 11 *s.* 8 *d.* 3 *f.*

The Pound of gold was worth 864 of theſe Miliarenſes, amounting to 40537,94 Farthings and decimals, which, divided by 1000, give 40,538, or above 10 pence and half a farthing for the value of Conſtantine's Miliarenſis in Engliſh money.

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(4) Suetonius, in Veſpaſiano, c. 16.

The Conſtantinopolitans kept their accounts in Solidi, which are reduced to pounds Sterling, by multiplying the given number by 58648, and cutting off five figures on the right hand for decimals.

CONCLUSION.

THE Greeks had no money at the time of the Trojan war; for Homer repreſents them as trafficking by barter (1), and Priam (an Aſiatic) weighs out the ten talents of gold, which he takes to ranſom his ſon's body of Achilles (2).

This ponderal Talent was very ſmall, as appears from Homer's deſcription of the Games at the Funeral of Patroclus, where two Talents of gold are propoſed as an inferior prize to a mare with foal of a mule. Whence I conclude it was the ſame that the Dorian Colonies carried to Sicily and Calabria; for Pollux tells us, from Ariſtotle, that the ancient Talent of the Greeks in Sicily contained 24 Nummi, each of which weighing an Obole and a half, the Talent muſt have weighed ſix Attic Drachms, or three Darics; and Pollux elſewhere mentions ſuch a Talent of gold. But the Daric weighed very little more than our Guinea; and if 2 Talents weighed about 6 Guineas, we may reckon the mare with foal worth 12; which was no improbable price, ſince we learn from a paſſage in the Clouds of Ariſtophanes, that, in his time, a running horſe coſt 12 Minas, or above 46 pounds Sterling.

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(1) Iliad H. ver. 472.
(2) Iliad Ω. ver. 232.

Therefore, this ſeems to have been the ancient Greek Talent, before the art of ſtamping money had introduced the greater Talents from Aſia and Egypt.

Herodotus tells us, the Lydians were reputed to be the firſt that coined gold and ſilver money (3); and the Talent, which the Greeks called Euboïc, certainly came from Aſia. Therefore, the Greeks learned the uſe of money from the Aſiatics.

The Romans took their weights and their money, either from the Dorians of Calabria, or from Sicily; for their Libra, Uncia, and Nummus, were all Doric words, their Denarius was the Sicilian Δεκάλιτρον; and Pollux tells us, from Ariſtotle, that the Sicilian Nummus was a quarter of the Attic Drachm (4); and the Romans called a quarter of their Denarius by the ſame name.

The weights I have produced of the Greek and Roman coins, ſo fully prove the ancient Attic Drachm to have been heavier than the Denarius, that it may ſeem ſuperfluous to quote any authorities in ſupport of their evidence: nor ſhould I do it here, but in order, at the ſame time, to anſwer an objection which may be made to the weight I have aſſigned to the Attic Drachm.

In the treaty between the Romans and Antiochus, recorded by Polybius and Livy (5), the weight of

(3) Herodot. L. I. § 94.

(4) See Pollux, L. IX. c. 6. § 80, 81. 87. & L. IV. c. 24. § 175.

(5) Polybius, Excerp. Leg. § 35. Livy, L. XXXVIII. c. 38.

the Euboïc talent is ſet at 80 Roman Pounds. The Talent is not, indeed, called Euboïc, in the Treaty, which was ſuperfluous when its weight was ſpecified; but both hiſtorians, in relating the terms offered by Scipio to Antiochus, on which this treaty was founded, call it ſo (6). Therefore in Livy's recital of the treaty, for *Argenti probi* XII *millia Attica talenta*, we ſhould read, with Gronovius, *Argenti probi Attici* XII *millia talenta*.

In § II of this diſcourſe, I have endeavoured to prove that the Euboïc Talent was equal to the Attic; and if ſo, it contained 6000 Attic Drachms; but 80 Roman pounds contained 6720 Denarii; therefore, according to this treaty, the weight of the Attic Drachm muſt be to that of the Denarius, as 6720 to 6000.

And, even if the Euboïc Talent was heavier than the Attic, in the proportion of 72 to 70, the Attic Drachm would ſtill be heavier than the Denarius; for in that caſe, the Euboïc talent ſhould contain 6171 Attic Drachms, and the two coins would be in the proportion of 6720 to 6171.

But an anonymous Greek fragment publiſhed by Montfaucon (7), makes 100 Attic Drachms equal to 112 Denarii; which proportion of the two coins being the ſame with that of 6000 to 6720, ſeems to have been taken from this treaty; and if it was, that writer certainly thought the Talent therein mentioned, equal to the Attic.

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(6) Polyb. Exc. Leg. § 24. Livy, L. XXXVII. c. 45.

(7) Analecta Græca, p. 393. Paris, 1688, in Quarto.

This proportion, however, does not agree with the weights I have aſſigned to the two coins; for if the Denarius weighed 60 Troy grains, and the Attic Drachm 66½, 6650 Denarii ſhould weigh 6000 Attic Drachms, or a Talent; but this number of Denarii is deficient of 80 Roman Pounds, by juſt 10 Ounces.

Now, this adjuſtment of the Talent to Roman Pounds, was probably occaſioned by the Greeks attempting to impoſe light weights upon the Romans, who finding the Talent to exceed 79 Pounds, might take what it wanted of 80 in their own favour, to puniſh the Greeks for their unfair dealing. Or, the ſtandard the Romans pitched upon for the Euboïc Talent might be ſomewhat over-weight; and the Coin of Lyſimachus above-mentioned, makes this conjecture not improbable; for that in the poſſeſſion of Mr. Duane weighs 537,6 Troy grains, which divided by 8 gives a Drachm of 67,2, exactly the weight required by this treaty, ſuppoſing the Denarius to weigh 60 grains. But the gold coins of Philip and Alexander are ſo perfect, and ſo correctly ſized, that their authority is indiſputable; and if the mean Drachm of 66½ grains derived from them were ſomewhat too ſmall, it cannot be increaſed by above a quarter of a grain.

Therefore, I ſuppoſe the great weight given to the Talent by this Treaty, may ariſe, partly from too heavy a ſtandard, and partly from the Romans taking the turn of the ſcale in their own favour.

After the Romans became maſters of Greece and Aſia, the Athenians might find it their intereſt to lower their Drachm to the weight of the Denarius, long before they were reduced into the form of a Roman Province, by Veſpaſian. When they did this, and whether they did it gradually, as may ſeem probable from ſome Tetradrachms now remaining, is uncertain; but that they did ſo, ſooner or later, cannot be doubted.

Pliny and Scribonius Largus expreſly ſay, the Attic Drachm was equal in weight to the Denarius (8): and A. Gellius, who, having reſided long at Athens, could not be ignorant of the value of the current money of that city, ſays 10000 Drachms were in Roman money, ſo many Denarii (9). And the Attic gold coin above-mentioned, in the Britiſh Muſeum, is a proof of their having reduced their money to the Roman ſtandard.

Theſe are the moſt authentic teſtimonies that the two Coins ever were equal; for though all the Greek writers of Roman affairs, call the Denarius, Drachma, it is no proof of their equality; for one being the current coin of Rome, as the other was of Athens, and not very unequal in value, a Greek might conſider the Denarius, as the Drachma of Rome, and tranſlate it by that word, which was familiar to his countrymen; as we call the French Ecû, or the Roman Scudo, a Crown; which hath no more affinity to the French or Italian names, either in ſound or ſignification, than Drachma hath to Denarius.

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(8) Pliny, Nat. Hiſt. at the end of L. XXI. Scr. Largus, in his Preface.

(9) A. Gellius, L. I. c. 8. Hoc facit nummi noſtratis Denariûm decem millia.

But the opinion that the ancient Attic Drachm was really equal to the Denarius, hath occaſioned much confuſion in the writers on this ſubject. Hence it is, that Rhemnius Fannius hath told us of an Attic Libra, or Mina (for he calls it by both names) of 75 Drachms; for the Roman Pound being reckoned to weigh 75 ancient Attic Drachms, Fannius, ſuppoſing them to be equal to ſo many Denarii, concluded it muſt be an Attic weight, as it could not, on ſuch ſuppoſition be the Roman Pound.

An anonymous fragment ſays, *The Attic Mina weighs* 12 *Ounces, the other* 16 (1): the former was the Roman Pound; the latter, the ancient Attic Mina. Which makes it probable, that when the Athenians reduced their money to the Roman ſtandard, they adopted the Roman Weights; and this may have occaſioned many miſtakes in the later writers.

The great diſproportion between the copper and ſilver money, when the Romans firſt coined the latter, hath induced many to believe that the firſt Denarii muſt have been heavier than the eighty-fourth part of their Pound; thinking it incredible that ſilver ſhould ever be valued at 840 times its weight of copper. But they can produce no ancient author of credit, in ſupport of this opinion.

On the contrary, Dionyſius of Halicarnaſſus, who made diligent enquiry into the antiquities of Rome, while all, or moſt of the evidences relating to them were in being, giving an account of the firſt inſtitution of the Claſſes by Servius Tullius, hath valued what the Romans called *centum millia æris*, or 100000 Pounds weight of copper, no higher than 100 Minas (2), which is at the rate of a Drachm for every 10 Pounds of copper; and this valuation he muſt have taken from the price of copper when the Romans firſt coined ſilver, reckoning the Denarius of that time equal to what it was when he wrote. But had the firſt Denarius been Didrachmal or Tetradrachmal, ſo well-informed a writer muſt have known it, and would have valued the copper money accordingly. Neither is it probable that Pliny, who hath given ſo particular an account of the diminution of the *As*, ſhould omit that of the Denarius.

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(1) See the Appendix to Stephens's Greek Theſaurus, col. 219.

But it is not impoſſible that ſilver might be ſo ſcarce at Rome when it was firſt coined there, as to bear the above-mentioned proportion to copper; and the Romans, not being a trading people, might have no regard to its value elſewhere. It is likewiſe probable, that, through ignorance and inexperience in money matters, they ſet too high a value on it at firſt; which ſeems to have been the caſe, by its quick reduction from 840 times its weight in copper, to 140, in leſs than thirty years; and again to 112 in between twenty and thirty years more; and not very long after to 56, at which price it remained during the continuance of the republican government.

But we are little intereſted in the weight of the Denarius for the firſt ſixty years after it was coined; and I have ſhewn that when the Romans began to coin gold, it did not exceed the eighty-fourth part of their Pound.

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(2) Compare Dionyſius with Livy.

The learned have differed much concerning the grammatical conſtruction and uſe of the word *Pondo*; moſt of them have ſuppoſed it to be a neuter indeclinable; but Gronovius hath produced many authorities to ſhew that it was the old ablative caſe of *Pondus*, *pondi*, for which they afterward uſed *Pondere*. Livy has, *Coronam auream libram pondo*, and the like in many places. Columella, *medicaminis pondo unciam*. Celſus, *pondo denariorum trium*. And Plautus in Menæchmis, *Pondo duum nummum*. In all which *pondo* ſeems to be the ablative caſe for *pondere*. And Feſtus tells us, *Centenas pondo dicebant antiqui, referentes ad libras*(3). Thus Livy ſays, *ſex millia pondo*, for, *ſex millia librarum pondere*, and *Pondo bina & ſelibras*, for, *Pondere bina librarum pondera & ſelibras*. In the former of theſe paſſages, Livy ſeems to have valued the Libra at 100 Denarii. For relating how Scipio was accuſed of having received a bribe from Antiochus of *ſex millia pondo auri, quadringenta octoginta argenti*, he calls it in a round ſum *Ducenties quadragies*, or 24000 Seſtertia(4). Now reckoning 100 Denarii to the Libra, and the value of gold decuple that of ſilver, it ſhould amount to 24192 Seſtertia; whereas reckoning 84 Denarii to the Libra, it would amount to no more than 20352. And Plutarch in his Life of Fabius, tranſlates what Livy calls *Pondo bina & ſelibras*, by 250 Drachms, which is a Seſtertium.

(3) Gronovius, De pec. vet. L. I. c. 6.

(4) Livy, L. XXXVIII. § 55.

The learned Budæus, and others after him, have called this ſum of 100 Denarii, *Libra centenaria*, and *Libra nummaria*; though he confeſſes he had never found either the word Libra or Pondo uſed to ſignify a ſum of money; but always, when applied to gold or ſilver, a weight of Plate or Bullion; and how the Libra, which certainly weighed but 84 Denarii when Livy wrote, ſhould be valued at 100, is a paradox I cannot account for. —And yet conformable to the universal custom from Solon to the present times, Clarke 148, 9.

larke p. 405, 6

THE END.